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Differences in self-reported character strengths across adolescence

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ABSTRACT

Introduction: Although typically considered a stable trait, character strengths may be subject to temporal changes. Whereas research has investigated these changes across adulthood, the pivotal period of adolescence remains relatively understudied.

Method: To identify potential developmental differences in character strengths, we conducted a cross-sectional exploratory analysis of 24 Character strengths, assessed by the VIA-Youth, across youth between ages 10 and 17 from four highly represented countries (N = 12,871).

Results: The general pattern was for older adolescents to generate lower scores in many traits compared to younger adolescents. When considering gender as a potential moderator, girls, on average, scored higher on most strengths, but also showed more consistently lower scores across ages.

Conclusion: Findings provide a nuanced understanding of developmental differences in character across adolescence in a large-scale study. We frame these findings in the context of recent work investigating how character strengths develop throughout adolescence and offer suggestions for future research and interventions.

1. Background

Almost as soon as a period of transition from childhood to adulthood was identified as a topic for inquiry, adolescence was labeled as a time of significant turmoil. A perspective first popularized in the early 20th Century, and echoed by analytic thinkers, identified adolescence as a period of "storm and stress" (Freud, 1969; Hall, 1904). Though empirical literature has refuted the hypothesis that adolescent angst is universal in Western society, research on adolescence continued to focus on explaining the challenges of the period (e.g., Arnett, 1999; Eccles et al., 1993). In recent years, however, researchers have taken on the complementary question of positive development in adolescence, a question often described in terms of character development (e.g., Lerner & Callina, 2014; Wang, Ferris, Hershberg, & Lerner, 2015). The purpose of the current study was to identify how positive development naturalistically manifests across adolescence through character strengths. We present an exploratory analysis of extensive multinational data spanning ages 10–17 to identify potential trends in character development.

Character is treated by psychologists as consisting of the positive and socially valued elements of personality (McGrath, Hall-Simmonds, & Goldberg, in press). That social value implicates character as the elements of personality with a moral component. Personality traits appear to develop in the long term in a manner consistent with the maturation principle of the neo-socioanalytic model of personality (Roberts & Nickel, 2017). That is, personality tends to evolve in socially desirable directions with greater social awareness and investment (Roberts & Wood, 2006). For example, adolescence sees increases in extraversion and openness and decreases in neuroticism between the ages of 12 and 18 (Pullmann, Raudsepp, & Allik, 2006). This is also a time of moral growth, as

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Table 1
The VIA model of strengths and virtues.

Virtues	Character strengths
Wisdom	Creativity [originality, ingenuity]
& Knowledge	Curiosity [interest, novelty-seeking, openness to experience]
	Judgment & Open-Mindedness [critical thinking]
	Love of Learning
	Perspective [wisdom]
Courage	Bravery [valor]
	Perseverance [persistence, industriousness]
	Honesty [authenticity, integrity]
	Zest [vitality, enthusiasm, vigor, energy]
Humanity	Capacity to Love and Be Loved
	Kindness [generosity, nurturance, care, compassion, altruistic love, "niceness"]
	Social Intelligence [emotional intelligence, personal intelligence]
Justice	Teamwork [citizenship, social responsibility, loyalty]
	Fairness
	Leadership
Temperance	Forgiveness & Mercy
	Modesty & Humility
	Prudence
	Self-Regulation [self-control]
Transcendence	Appreciation of Beauty and Excellence [awe, wonder, elevation]
	Gratitude
	Hope [optimism, future-mindedness, future orientation]
	Humor [playfulness]
	Religiousness & Spirituality [faith, purpose]

Note. Terms in brackets are variants of the Character strength according to Peterson and Seligman (2004).

older adolescents (ages 14 and 15) demonstrate greater virtue use in moral deliberations (Thoma et al., in press) and greater use of the elements of moral character (Hilliard et al., 2014) compared to their younger counterparts (11 and 12).

1.1. Personality development in adolescence

Certain developmental processes do not necessarily possess positive trajectories until adulthood (Malin, Reilly, Quinn, & Moran, 2014). According the disruption hypothesis (Soto & Tackett, 2015), adolescents experience momentary dips in some aspects of personality maturity (Denissen, Van Aken, Penke, & Wood, 2013). Levels of agreeableness, conscientiousness, and openness to experience decrease at the onset of adolescence compared to late childhood before continuing to increase into early adulthood (Soto, John, Gosling, & Potter, 2011). Such dips could reflect early adolescents' difficulties adjusting to new roles for which they have little experience (Bleidorn et al., 2013; Hudson & Roberts, 2016). Alternatively, it could reflect artifactual factors such as greater accuracy in comparing oneself with others or the declining influence of social desirability on self-report (e.g., Barry, Lui, & Anderson, 2017; Crockett, Schulenberg, & Peterson, 1987).

The most extensively researched model of character, or specifically character strengths, is the VIA Classification of Strengths and Virtues (Peterson & Seligman, 2004). This model includes 24 character strengths conceptually organized as reflections of six virtues: wisdom, courage, humanity, justice, temperance, and transcendence (see Table 1). This framework has been used in cross-cultural research involving adolescents from a number of countries (McGrath, 2015, 2016; McGrath & Walker, 2016). VIA character strengths have been studied as buffers against various life stressors (Harzer & Ruch, 2015; Huta & Hawley, 2010; Park & Peterson, 2006a, 2009). Most germane to the current research, they have been associated with a number of positive outcomes in youth, including flourishing, school adjustment, and heightened prosociality (Gillham et al., 2011; Park & Peterson, 2006b; Ruch, Weber, Park, & Peterson, 2014; Shoshani, Kor, Pirutinsky, Mikulincer, & Miller, 2019; Shoshani & Slone, 2013; Toner, Haslam, Robinson, & Williams, 2012; Van Eeden, Wissing, Dreyer, Park, & Peterson, 2008; Weber, Ruch, Littman-Ovadia, Lavy, & Gai, 2013). Much as in adults, such outcomes for youth could result from greater opportunity for those embracing various character strengths to achieve greater success in society, thereby further fostering increased wellbeing. This overall desirability of character strengths has led to consideration of their origins in youth, and the development of programs to foster increases in character strengths among adolescents (e.g., Berkowitz & Bier, 2005; Wang et al., 2015). For youth, increases in character strengths could potentially increase success in secondary education, both academically and socially, which could improve quality of life in adulthood (Logan, Kilmer, & Marlatt, 2010; Lounsbury, Fisher, Levy, & Welsh, 2009).

1.2. Character strengths in adolescence

Much like other socially relevant elements of personality and moral reasoning, character strengths are likely to demonstrate systematic variation across adolescence before stabilizing in adulthood (Gander, Hoffman, Proyer, & Ruch, 2018). Indeed, even adult character strengths exhibit continuing plasticity over 3.5 years (e.g., Peterson, Park, Pole, D'Andrea, & Seligman, 2008). Despite a

relative dearth of literature on developmental trends in character strengths in youth, preliminary cross-sectional findings nonetheless indicate associations between strengths and age, as character strengths begin to manifest in differentiated patterns across adolescence (Shubert, Wray-Lake, Syvertsen, & Metzger, 2019). For example, previous work shows that leadership, other-directed, intellectual, and temperance strengths were significantly higher in older youth than in younger youth (Weber et al., 2013). One longitudinal study found that while the majority of character strengths remained relatively stable between the ages of 12 and 14, those associated with virtues of humanity and justice tended to exhibit an upward trend over the three years (Ferragut, Blanca, & Ortiz-Tallo, 2014). Another study found inter- and intrapersonal strengths exhibited greater fluctuations, while spirituality was relatively stable across adolescence (Shoshani, Kor, Pirutinski, Mikulincer, & Miller, 2019). Within a German sample, adolescents reported substantially lower levels of character strengths at a later age in several domains (e.g., perseverance, forgiveness, creativity); such results could potentially provide support for the disruption hypothesis.

The manifestation of character strengths across adolescence is additionally different for boys and girls based on the roles they start to assume as they begin to enter adulthood. For the most part, girls typically outscore boys on character strengths throughout adolescence (Heintz, Kramm, & Ruch, 2019; Ruch et al., 2014). Additional findings indicate upward trends among girls in certain strengths that are related to optimal communal functioning (e.g., perspective and kindness; Toner et al., 2012). Demonstration of these character strengths is consistent with female sociality that emphasizes tend-and-befriend strategies with others (Taylor et al., 2000), in contrast to more male sociality in adolescence, which is largely rooted in dominance hierarchies (Cummins, 2005; Hawley, 2007, pp. 1–29). That is, the emergence of different character strengths in adolescence could additionally be a product of these different social dynamics becoming engrained during adolescence, thereby necessitating consideration of when positive development may start for boys compared to girls.

The most common measure of the VIA character strengths in youth is the VIA-Youth (Park & Peterson, 2006b), a 198-item questionnaire developed for ages 10-17.[1] There appears to be considerable measurement invariance across ages 10–17 on the VIA-Youth as well as other measures of the VIA character strengths in adolescence (McGrath & Walker, 2016). This finding creates an opportunity for a meaningful comparison of character strengths as a function of age. One limitation of the dataset available through the VIA website, however, is its purely cross-sectional structure. Each record represents a different youth, so that different age groups are represented by different samples. It is therefore impossible to isolate age differences from population differences. That is, if recruitment methods resulted in substantially different populations of individuals comprising the 12-year-old and the 14-year-old age groups, then differences between those groups may have nothing to do with age. A similar issue was recently raised about character strength research evaluating the effects of cultural traumas, such as terrorist attacks. Several earlier studies found differences in mean scores on an adult measure of character strengths when comparing people who completed the measure before versus after such an attack, and assumed these differences reflected cultural changes in character strengths caused by the attacks. However, Lamade, Jayawickreme, Blackie, and McGrath (in press) instead concluded the differences may have reflected nothing more than differences in the type of people who chose to complete the measure during the two time periods.

1.3. Current research

The present study implemented a unique approach to reducing the potential influence of population differences by limiting analyses to those character strengths that demonstrated consistent age-related development across countries. A difference that is consistent across countries is unlikely to reflect systematic differences in recruiting strategies or other incidental factors, and more likely indicative of a cross-culturally valid age-related change.

2. Method

2.1. Participants

The initial sample consisted of 18,764 youth (8773 girls, 6940 boys, 3051 deciding not to indicate gender) between ages 10 and 17 from a reported 125 countries who completed the English language version of the VIA-Youth on the VIA Institute on Character website between 2003 and 2016. None were actively recruited. Participants did not provide information about why they came to the site, but anecdotal evidence would suggest several primary sources. Participants may have self-referred based on personal interest in positive psychology. Researchers, teachers, and coaches also often direct youth to the VIA website for purposes of data collection, advisement, or classroom experiences. Participants immediately received personal feedback on their results. Data on ethnicity were not collected.

2.2. Measures

2.2.1. VIA-youth

As noted previously, the VIA-Youth consists of 198 self-report items developed and piloted to be developmentally appropriate (Park & Peterson, 2006b). Items consist of behaviors, attitudes, and self-perceptions considered reflective of each strength. They are completed on 5-point scales ranging from *very much like me* to *not like me at all.* Several studies have suggested good psychometric data for the VIA-Youth (Park & Peterson, 2006b; Ruch et al., 2014).

2.3. Procedure

The initial sample included sufficient numbers of participants from four primarily English-speaking countries to justify assuming differences between the nations would be reliable (N = 12,871): Australia (n = 4869; M_{Age} = 14.29, SD = 1.69; 62% female), Canada (n = 694; M_{Age} = 14.66, SD = 1.38; 51% female), the United Kingdom (n = 722; M_{Age} = 14.47, SD = 1.70; 81% male), and the United States (n = 6586; M_{Age} = 14.94, SD = 1.81; 57% female).[2] This decision to consider primarily English-speaking countries was to ensure optimum comprehension of VIA-Youth by participants. No other English-speaking country demonstrated sufficient sample size that the entire range of ages was reasonably represented.

3. Results

3.1. Country analysis

We conducted a custom one-way multivariate analysis of covariance (MANCOVA) with age as a continuous moderator. Specifically, we submitted our data to a multivariate analysis in SPSS by entering country of origin as a categorical predictor and age as a covariate. Within this function, we treated age to serve as a moderator, wherein we tested for interactive effects between age and country of origin. Such analyses are conducted to reduce the familywise error rate by using a single omnibus analysis rather than multiple omnibus tests necessitated through traditional regression analyses (e.g., Sacco & Brown, 2018).

The Country × Age interaction did not emerge for six of the character strengths: beauty, creativity, judgment, leadership, perspective, prudence, social intelligence, and spirituality. For character strengths eliciting significant interactions, effects were consistently miniscule. In every case, the partial eta-squared adjusted for bias was $\eta_p^2 < 0.003$ (Mordkoff, in press). The absence of nontrivial interactive effects substantially reduces the likelihood that effects could be due to systematic differences in the populations sampled. We therefore consider country no further as a moderator and constrain analyses to respondents from the four countries listed above.

3.2. Character strength trends

Descriptive statistics for each strength across all ages are in Table 2 and pairwise correlations are presented in Table 3. Given the sample size, all character strengths were significantly positively correlated with each other ($p < .001$). Using common metrics for the size of a correlation, 86% of the correlations between strengths were at least medium-sized (≥0.30) and 24% were large (≥0.50), indicating substantial overlap between strengths. Only one correlation exceeded 0.70, the correlation between curiosity and learning, suggesting the strengths overlap substantially but are not redundant (McGrath et al., in press). Additionally, and consonant with the

Table 2
Descriptive statistics of character strengths across ages.

Age	Beauty	Bravery	Creativity	Curiosity	Fairness	Forgiveness	Gratitude	Honesty
10	3.34 (0.69)	3.35 (0.66)	3.52 (0.64)	3.56 (0.62)	3.50 (0.60)	3.37 (0.65)	3.66 (0.57)	3.27 (0.56)
11	3.39 (0.62)	3.34 (0.61)	3.51 (0.60)	3.56 (0.59)	3.42 (0.56)	3.29 (0.66)	3.72 (0.52)	3.29 (0.47)
12	3.45 (0.63)	3.33 (0.61)	3.51 (0.62)	3.53 (0.58)	3.39 (0.57)	3.26 (0.64)	3.72 (0.53)	3.28 (0.52)
13	3.50 (0.65)	3.32 (0.63)	3.43 (0.63)	3.54 (0.61)	3.40 (0.56)	3.28 (0.65)	3.71 (0.55)	3.30 (0.52)
14	3.50 (0.65)	3.25 (0.60)	3.34 (0.60)	3.49 (0.59)	3.38 (0.55)	3.29 (0.63)	3.67 (0.54)	3.30 (0.50)
15	3.52 (0.66)	3.28 (0.61)	3.35 (0.62)	3.50 (0.59)	3.37 (0.56)	3.22 (0.65)	3.63 (0.56)	3.32 (0.49)
16	3.49 (0.63)	3.25 (0.58)	3.28 (0.61)	3.48 (0.58)	3.36 (0.55)	3.24 (0.62)	3.65 (0.53)	3.30 (0.48)
17	3.50 (0.62)	3.29 (0.60)	3.31 (0.61)	3.52 (0.56)	3.38 (0.53)	3.24 (0.63)	3.70 (0.51)	3.34 (0.47)
Age	Hope	Humor	Judgment	Kindness	Leadership	Learning	Love	Modesty
10	3.53 (0.64)	3.37 (0.71)	3.44 (0.62)	3.44 (0.57)	3.16 (0.68)	3.58 (0.66)	3.55 (0.61)	3.43 (0.58)
11	3.51 (0.59)	3.44 (0.63)	3.44 (0.55)	3.47 (0.53)	3.24 (0.64)	3.56 (0.60)	3.58 (0.55)	3.39 (0.55)
12	3.51 (0.60)	3.46 (0.62)	3.44 (0.55)	3.47 (0.52)	3.25 (0.66)	3.50 (0.61)	3.53 (0.59)	3.44 (0.57)
13	3.50 (0.62)	3.49 (0.66)	3.41 (0.53)	3.52 (0.55)	3.19 (0.67)	3.50 (0.62)	3.48 (0.63)	3.49 (0.57)
14	3.46 (0.61)	3.46 (0.63)	3.39 (0.54)	3.48 (0.52)	3.14 (0.65)	3.45 (0.60)	3.42 (0.61)	3.48 (0.54)
15	3.45 (0.64)	3.45 (0.63)	3.42 (0.54)	3.47 (0.54)	3.14 (0.70)	3.47 (0.60)	3.37 (0.63)	3.47 (0.55)
16	3.46 (0.63)	3.38 (0.61)	3.43 (0.52)	3.43 (0.50)	3.11 (0.66)	3.45 (0.60)	3.34 (0.59)	3.47 (0.55)
17	3.51 (0.61)	3.40 (0.60)	3.47 (0.51)	3.46 (0.50)	3.14 (0.66)	3.48 (0.58)	3.42 (0.57)	3.51 (0.54)
Age	Perseverance	Perspective	Prudence	Self-Reg.	Social Int.	Spirituality	Teamwork	Zest
10	3.49 (0.63)	3.25 (0.62)	3.19 (0.56)	3.20 (0.54)	3.43 (0.57)	3.40 (0.75)	3.54 (0.63)	3.62 (0.63)
11	3.45 (0.56)	3.34 (0.57)	3.18 (0.50)	3.24 (0.49)	3.46 (0.55)	3.41 (0.73)	3.53 (0.60)	3.59 (0.55)
12	3.46 (0.58)	3.38 (0.58)	3.21 (0.51)	3.24 (0.52)	3.49 (0.53)	3.31 (0.73)	3.55 (0.58)	3.57 (0.60)
13	3.39 (0.59)	3.37 (0.59)	3.18 (0.50)	3.24 (0.51)	3.50 (0.54)	3.24 (0.77)	3.57 (0.57)	3.54 (0.59)
14	3.30 (0.60)	3.36 (0.56)	3.18 (0.49)	3.21 (0.51)	3.48 (0.51)	3.17 (0.78)	3.53 (0.56)	3.47 (0.59)
15	3.25 (0.60)	3.39 (0.57)	3.18 (0.53)	3.18 (0.52)	3.48 (0.51)	3.13 (0.78)	3.51 (0.57)	3.40 (0.61)
16	3.25 (0.57)	3.36 (0.54)	3.17 (0.49)	3.20 (0.50)	3.47 (0.51)	3.15 (0.75)	3.50 (0.54)	3.35 (0.59)
17	3.27 (0.57)	3.38 (0.53)	3.16 (0.48)	3.23 (0.49)	3.48 (0.51)	3.21 (0.75)	3.57 (0.52)	3.38 (0.58)

Note. Self-Reg = Self-Regulation; Social Int = Social Intelligence.

Table 3
Correlation between strength scales, reliabilities, and descriptive statistics.

Strength	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	*M* (*SD*)
1. Beauty																									3.49 (.64)
2. Bravery	.40																								3.28 (61)
3. Creativity	.43	.49																							3.36 (.62)
4. Curiosity	.43	.47	.58																						3.51 (.59)
5. Fairness	.37	.52	.39	.41																					3.38 (.55)
6. Forgiveness	.30	.33	.22	.28	.55																				3.26 (.64)
7. Gratitude	.41	.51	.38	.43	.53	.42																			3.68 (.54)
8. Honesty	.32	.50	.36	.36	.52	.37	.49																		3.31 (.49)
9. Hope	.33	.47	.43	.43	.44	.31	.61	.44																	3.48 (.62)
10. Humor	.35	.49	.47	.42	.36	.27	.44	.38	.42																3.43 (.63)
11. Judgment	.38	.50	.46	.48	.54	.33	.51	.48	.52	.36															3.43 (.53)
12. Kindness	.47	.59	.42	.45	.60	.50	.61	.53	.42	.50	.50														3.47 (.52)
13. Leadership	.28	.50	.44	.41	.40	.24	.42	.38	.51	.46	.47	.42													3.15 (.66)
14. Learning	.45	.50	.58	.72	.49	.33	.49	.44	.50	.40	.56	.49	.46												3.47 (.60)
15. Love	.30	.42	.31	.32	.41	.33	.63	.39	.50	.39	.36	.50	.36	.38											3.42 (.60)
16. Modesty	.28	.35	.21	.25	.51	.35	.39	.38	.26	.21	.40	.44	.19	.30	.25										3.47 (.55)
17. Perseverance	.26	.47	.40	.42	.48	.27	.52	.49	.57	.35	.56	.46	.55	.52	.42	.33									3.31 (.59)
18. Perspective	.41	.56	.48	.44	.49	.34	.51	.49	.51	.54	.56	.57	.63	.47	.41	.33	.49								3.37 (.56)
19. Prudence	.25	.34	.31	.32	.44	.27	.41	.49	.38	.22	.54	.39	.32	.42	.31	.35	.47	.40							3.18 (.50)
20. Self-Reg	.27	.35	.29	.29	.50	.34	.42	.46	.38	.25	.47	.42	.29	.39	.31	.43	.48	.38	.50						3.21 (.51)
21. Social Int	.37	.50	.43	.42	.48	.36	.51	.50	.51	.50	.54	.53	.51	.45	.40	.35	.47	.63	.47	.45					3.48 (.52)
22. Spirituality	.26	.27	.21	.19	.26	.23	.43	.24	.46	.22	.27	.31	.30	.23	.38	.16	.35	.31	.22	.21	.29				3.20 (.76)
23. Teamwork	.39	.56	.43	.46	.65	.45	.59	.52	.53	.49	.57	.63	.56	.54	.46	.46	.58	.58	.40	.47	.56	.32			3.53 (.56)
24. Zest	.30	.39	.42	.42	.39	.30	.52	.37	.60	.47	.39	.39	.39	.44	.45	.20	.50	.46	.28	.30	.46	.35	.47		3.44 (.60)
25. Age	.03	-.03	-.11	-.02	-.03	-.03	-.02	-.02	**-.01**	-.03	.02	-.03	-.04	-.03	-.08	.03	-.11	.02	-.02	**-.01**	**.00**	-.06	**-.01**	-.13	14.68 (1.74)
Cronbach's α	.85	.84	.84	.81	.78	.84	.83	.82	.85	.86	.80	.83	.84	.83	.82	.76	.85	.76	.79	.72	.70	.90	.78	.82	

Note. Self-Reg = Self-Regulation; Social Int = Social Intelligence. All correlations were significant at $p < .001$ except the four in bold that were non-significant.

Table 4
Descriptive statistics for character strengths for boys versus girls.

Strength	Boys	Girls	Cohen's *d*
Beauty	3.34 (0.67)	3.61 (0.60)	0.41***
Bravery	3.25 (0.61)	3.30 (0.60)	0.09***
Creativity	3.39 (0.61)	3.33 (0.62)	−0.10***
Curiosity	3.52 (0.58)	3.50 (0.59)	0.03
Fairness	3.34 (0.56)	3.41 (0.55)	0.14***
Forgiveness	3.22 (0.64)	3.29 (0.64)	0.11***
Gratitude	3.61 (0.55)	3.72 (0.52)	0.21***
Honesty	3.29 (0.50)	3.32 (0.49)	0.06**
Hope	3.47 (0.61)	3.49 (0.62)	0.03
Humor	3.41 (0.62)	3.45 (0.63)	0.05**
Judgment	3.41 (0.54)	3.44 (0.53)	0.05**
Kindness	3.36 (0.53)	3.55 (0.50)	0.36***
Leadership	3.13 (0.66)	3.17 (0.66)	0.07***
Learning	3.48 (0.60)	3.47 (0.60)	−0.02
Love	3.35 (0.62)	3.48 (0.59)	0.22***
Modesty	3.40 (0.55)	3.53 (0.54)	0.24***
Perseverance	3.29 (0.59)	3.32 (0.59)	0.04*
Perspective	3.30 (0.57)	3.42 (0.54)	0.21***
Prudence	3.20 (0.50)	3.16 (0.50)	−0.09***
Self-Regulation	3.22 (0.52)	3.20 (0.50)	−0.04*
Social Intelligence	3.48 (0.53)	3.48 (0.51)	0.01
Spirituality	3.13 (0.77)	3.25 (0.75)	0.16***
Teamwork	3.48 (0.57)	3.57 (0.54)	0.16***
Zest	3.42 (0.60)	3.46 (0.60)	0.07***

*$p < .05$, **$p < .01$, ***$p < .001$.
Note. Negative *d* values indicate instances where the boys' mean exceeded the girls' mean.

disruption principle (Soto & Tackett, 2015), most strengths exhibited a negative correlation with age, with the exception of four significant positive correlations (beauty, judgment, modesty, and perspective). Four strengths did not correlate with age (hope, self-regulation, social intelligence, and teamwork).

3.3. Gender and character strengths

Because of the possibility that gender may interact with participants' age, we conducted an exploratory analysis for gender with each of the 24 character strengths. Given the exploratory nature of these analyses, we did not generate omnibus tests first. We first conducted a series of independent-samples *t*-tests comparing boys' and girls' character strengths. All were significant ($p < .05$), except curiosity, learning, and social intelligence. Girls exhibited higher levels than boys on all other strengths except for creativity, prudence, and self-regulation, where the mean for boys was higher (see Table 4).

We then conducted 24 moderation analyses using Model 1 of PROCESS (Hayes, 2013) with age as a predictor and gender as the moderator. Of these interactions, nine were significant: beauty ($b = -0.02, p < .001$), creativity ($b = -0.02, p = .001$), fairness ($b = -0.01, p = .031$) honesty ($b = -0.01, p = .010$), humor ($b = -0.02, p < .001$), modesty ($b = -0.02, p < .001$), prudence ($b = -0.01, p = .034$), self-regulation ($b = -0.01, p = .023$), and social intelligence ($b = -0.02, p = .003$). Simple slope analyses indicated that older girls reported lower levels of creativity, fairness, humor, prudence, self-regulation, and social intelligence than younger girls. Conversely, boys reported higher levels of beauty, modesty, and social intelligence at older ages than younger ages, yet lower levels of honesty and creativity at older ages. See Table 5 for slopes and significance.

Table 5
Exploratory simple slope analyses for significant Gender*Age effects.

Strength	Boys	Girls
Beauty	.02***	-.00
Creativity	-.03***	-.04***
Fairness	.01	-.02***
Honesty	.01*	.00
Humor	.00	-.02***
Modesty	.02***	.00
Prudence	.00	-.01**
Self-Regulation	.00	-.01*
Social Intelligence	.01*	-.01*

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

4. Discussion

The present study evaluated differences in character strengths across adolescents ages 10 to 17 using the VIA-Youth, which found that the majority of character strengths were associated with significant trends across age groups. Many differences in character strengths reflected declines as adolescence progressed, which is consonant with a disruption hypothesis of personality development (Soto & Tackett, 2015) and empirically demonstrated declines seen in previous work (e.g., Ruch et al., 2014). Conversely, and consonant with a maturation principle (Roberts & Nickel, 2017), three character strengths demonstrated higher levels at older ages (beauty, modesty, and perspective). It is noteworthy that all three of these strengths are fairly private, perhaps suggesting an increasing inner life for youth. The development of perspective-taking could additionally be explained by increases in ego maturity that emerge throughout adolescence (Loevinger, 1972). As children mature, they have greater ease in seeing other perspectives, including those beyond what is immediately familiar to them (van der Graaf et al., 2014). Adolescents are also more likely to display greater humility about their abilities as they mature (Genyue, Heyman, & Lee, 2011). Indeed, these findings align with previous work indicating increases in the character strengths of humility and perspective across adolescence (Toner et al., 2012; Weber et al., 2013).

Other character strengths for which a negative association emerged could be related to facing new social challenges that require increasing interpersonal sensitivity (e.g., fairness, forgiveness, love). Adolescents could feel unsure of their own abilities to navigate mature social landscape and therefore perceive themselves as incapable of demonstrating these strengths. One complementary theoretical perspective on the ontogeny of personality development that could help contextualize these findings is facultative calibration. Individuals' personalities manifest following an appraisal of their own abilities to determine whether they could exhibit the behavioral repertoire connoted through the trait. For example, rather being purely genetic, the social boldness demonstrated by extraverted individuals appears partially contingent upon attractiveness and physical strength that would make such boldness socially desirable (Lukaszewski & Roney, 2011; von Borrell, Kordsmeyer, Gerlach, & Penke, 2019). In the context of character strengths, adolescents could perceive themselves as not possessing sufficient social resources to recognize themselves as possessing given character strengths (Robins, Trzesniewski, Tracy, Gosling & Potter, 2002). These findings are consistent with both disruption and the emergence of personality maturation in early adulthood (Soto et al., 2011). Although adolescents are likely going through maturation (Denissen et al., 2013), these changes could nonetheless be slow, as other personality traits experience only a 10% change into late adulthood, suggesting increases may only occur beyond adolescence (Srivastava, John, Gosling, & Potter, 2003).

Girls are particularly vulnerable to becoming more self-critical throughout adolescence (Simmons, Blyth, Van Cleave, & Bush, 1979), which is consistent with our finding of lower levels in character strengths for older girls than younger girls, an effect that was not apparent for older boys. This finding could potentially reflect several processes, including increased self-awareness during this period (Harter, 1999). Although both boys and girls become more self-aware during adolescence, girls' earlier onset of puberty could position them to have greater awareness of themselves at an earlier age that could manifest as insecurities more readily compared to boys. Whereas girls' strengths were lower at later ages compared to younger ages, boys appeared to be buffered from lower levels of strength at older ages and even had higher levels of strengths then. This difference could reflect differences in response styles. Boys' responses could have been in the service of appearing attractive or socially desirable to girls, given both their increased interest in mating during adolescent and that boys signal their desirability more readily than do girls (e.g., Paulhus, 1991; Ronay & von Hippel, 2010; Wilbur & Campbell, 2011). Future research would benefit from identifying the specific basis for these differences across age for boys and girls.

4.1. Limitations and future directions

With our analyzed sample of over 12,000 youth spanning the entire age range of the VIA-Youth, this study is the largest-to-date on differences in character strengths across adolescence. Nonetheless, the current study is not without its limitations, necessitating future research. The primary limitation is its reliance on a cross-sectional between-subject design rather than a longitudinal design, a consistent source of confounding in developmental research on character strengths (Fienberg, 2013). Although data collection occurred over a relatively brief period of time, participant responses could have been subject to generational effects, wherein members of a birth year cohort could have experienced life events differently (e.g., terrorist attacks) from members of other cohorts that were shaped by certain developmental stages (e.g., Trzesniewski & Donnellan, 2010). Future work would benefit from specifically recognizing generational differences while addressing how various events could shape developmental trajectories. This goal could be accomplished through a staggered longitudinal design across adolescence in which data collection would begin for a cohort in successive generations offset by a few years. Doing so would allow researchers to identify developmental trends while simultaneously identifying how generational effects could shape differences in character development.

Given the especially small effect sizes for age and gender effects, we additionally urge caution in interpretation, although encourage consideration for why these effects are small. One reason could be that we assessed subtle differences in socially desirable traits across a large sample. That is, although the current sample could represent a sufficiently powered cross-sectional analysis of character across adolescence, additional statistical noise could have resulted from socially desirable responding (Paulhus, 1991). Future research would benefit from additionally assessing and covarying respondents' proclivity towards biased responding.

It should also be noted that although our sample indicated that age of respondent was a fairly reliable index of character strengths across various nations, our sample resided in WEIRD societies (i.e., Western, educated, industrialized, rich, and democratic; Henrich, Heine, & Norenzayan, 2010), and all had access to the Internet, which could limit the generalizability of our findings to the majority of adolescents, particularly in non-Western nations. Despite adolescence having biological components (e.g., puberty, hormonal changes), there remain cultural differences suggesting different trajectories in character strength development. The desire to strive for

collectivistic ideals in non-WEIRD cultures and individualistic ideals in WERID cultures (Cai et al., 2011; O'Mara, Gaertner, Sedikides, Zhou, & Liu, 2012; but see; Heine & Renshaw, 2002) could suggest culture-dependent changes in character strengths across adolescence. Future research would benefit from assessing culturally relevant self-construals as the basis of cultural differences rather than superordinate nation. It could have been possible that we assessed participants from non-WEIRD heritages or cultures (e.g., immigrant communities), but our data did not provide the opportunity for participants to indicate either the culture to which they belong or the extent to which they may identify with either a collectivistic or individualistic culture. Future work would benefit from specifically considering the individualism-collectivism axis to achieve a more accurate cultural representation within English-speaking nations.

Our findings may provide guidance in developing interventions to improve character strengths in adolescents. The most immediate option for an intervention could include character education programs involving the development of strengths. In particular, given the potentially increasing awareness of their limitations in adolescence that would disrupt the adultlike trajectories in strength development, interventions could focus on helping adolescents identify their strengths or overcome potential limitations. In overcoming potential limitations, future research could benefit from specifically employing other interventions that previously demonstrated efficacy in improving functioning in adults for adolescents. For example, mindfulness appears especially effective as an intervention for enhancing adults' strength in humor, with the crux of such improvement being related to their embrace of lighter aspects of life (Hofmann, Heintz, Pang, & Ruch, in press). With an increasing prevalence of adolescent depressive episodes over the past decade (Mojtabai, Olfson, & Han, 2016), such interventions could be particularly useful for improving adolescents' overall wellbeing.

Furthermore, knowledge of the age differences in character strengths would be especially helpful for identifying which strengths to target in interventions at different ages. For example, beauty and judgment increased among older adolescents in the current sample, which could suggest focusing on such topics more with younger adolescents. Conversely, strengths such as zest and love were reported at substantially lower levels in later adolescence, which could suggest that researchers may seek to provide interventions seeking to improve levels of those strengths in the future. These intervention strategies could be particularly helpful for girls, who exhibited more consistent mean decreases than boys in later adolescence. Boys' lower levels on many scales, especially at younger ages, would additionally suggest they could benefit from specifically identifying how to foster increases in various strengths. Future research would benefit from initially considering how reductions in character strengths ultimately manifest—whether it be behaviorally or merely through self-perceptions. This distinction would subsequently inform the necessary steps researchers could take in developing effective programs to foster increases in strength. If these reductions in character strengths are indeed the result of individuals coming to terms with their own limitations, for example, interventions could focus on how many strengths often take time to cultivate as an adult.

5. Conclusion

The current study was an exploratory analysis determining how different ages in adolescence are associated with changes in character strengths. Specifically, we found an overall decrease in strengths across this developmental stage. Such consideration of the age in which strengths lower is crucial for identifying effective interventions to ensure growth during such a critical time for many individuals.

Notes

[1] The VIA-Youth is freely accessible through the VIA Institute on Character website: http://www.viacharacter.org. Youth are referred to the website by various individuals, including teachers, counselors, and youth program leaders.

[2] See the online supplemental materials for the separate descriptive statistics for all four countries analyzed in the current study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.adolescence.2019.12.008.

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