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BRIEF REPORT

Brief Report: Character Strengths in Adults with Autism Spectrum Disorder Without Intellectual Impairment

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Abstract In the current study, we assessed character strengths in individuals with autism spectrum disorder (ASD, n = 32) and neurotypical controls (n = 32) using the Values in Action Inventory (VIA-IS, Peterson and Seligman 2004) and explored associations with levels of satisfaction with life (SWL). The most frequently endorsed signature strengths (i.e., five top-ranked strengths within an individual's strength ranking) were *emotional* (*humour, love*) and *interpersonal strengths* (*kindness, fairness*) in the control group, the most frequently endorsed signature strengths in the ASD group were *intellectual strengths* (*open-mindedness, creativity, love of learning*). *Interpersonal* and *emotional strengths* had, however, the highest positive associations with SWL in the ASD group.

Keywords Autism spectrum disorder · Adults · Character strengths · Satisfaction with life

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Introduction

In the last decades, the interest in studying resources and strengths in individuals with autism spectrum disorder (ASD), in contrast to the mere study of symptoms and deficits, has grown. This is especially relevant because outcomes (e.g., satisfaction with life, employment) in adults with ASD are often poor and rates of comorbid depression are high (Howlin and Moss 2012). Strengths-focused research can inform interventions targeting improvements of outcomes in adults with ASD. Strengths in some individuals with ASD have been described so far in three different contexts: (1) abilities related to a specific cognitive style (Dawson et al. 2007), (2) skills related to special interests (Kirchner and Dziobek 2014) and (3) positive aspects related to personality and character (Preißmann 2014).

In the current paper, we sought to address the third area of potential strengths in ASD, namely those related to personality characteristics. There are anecdotal descriptions of individuals with ASD having certain strengths associated with their personality, such as being fair, authentic and reliable (Preißmann 2014). Also Attwood and Gray (1999) described individuals with ASD as loyal friends who speak their mind "irrespective of social context or adherence to personal beliefs", are free of sexist, ageist, or culturalist biases and have an inherent determination to seek the truth. There have been scientific attempts to describe personality beyond mere psychopathology in ASD (Ozonoff et al. 2005; Strunz et al. 2014); however, the focus was often on weaknesses rather than strengths (Schriber et al. 2014).

A new perspective on personality is taken by positive psychology, which offers a theoretical framework to study character strengths as supplement to the study of deficits

and disorders in traditional psychology (Park and Peterson 2009). Character strengths are defined as positively valued trait-like individual differences, which manifest in individuals' thoughts, feelings, and behaviours across different situations and are stable over time. In a first study comparing individuals with ASD and neurotypical (i.e., non-autistic) controls regarding their character strengths with the Values in Action Inventory of Strengths, (VIA-IS, Peterson and Seligman 2004) Samson and Antonelli (2013) found the ASD group to score mostly lower on *emotional* and *interpersonal* character strengths but as high on most *intellectual strengths* and *strengths of restraint* as the control group. However, rather than only comparing magnitudes of character strengths of individuals with ASD to a norm population (Samson and Antonelli 2013), it was suggested that in vulnerable populations it is more warranted to examine an individual's strengths relative to his/her other strengths of character (Park and Peterson 2009). With this individual strength-based approach, the focus is on those strengths, which the individual possesses, rather than on differences from others. In particular, the five top-ranked strengths in onés strength ranking, also referred to as *signature strengths,* have received growing research attention, as they are considered to be the most salient to a person (Peterson and Seligman 2004; Ruch et al. 2010).

Another influential line of research regarding character strengths provides growing empirical evidence in neurotypical individuals, that the endorsement of character strengths is positively associated with satisfaction with life (SWL) (Littman-Ovadia and Lavy 2012). It has been shown that training those character strengths which were associated with SWL—compared to others which were not-improves SWL (Proyer et al. 2013). However, groups of individuals (e.g., different cultures/occupations/genders) seem to differ regarding which character strengths are most strongly associated with SWL (Littman-Ovadia and Lavy 2012; Peterson et al. 2007).

In the current study we (1) assessed character strengths in individuals with ASD and neurotypical controls, (2) examined which character strengths are most often signature strengths in individuals with ASD and explored differences from controls and (3) explored associations between character strengths and SWL in individuals with ASD and controls.

Methods

Participants

Thirty-two adults with ASD without intellectual impairment and 32 matched (gender, age, education and employment status) neurotypical controls were included in the study. Subjects with ASD were recruited through the autism outpatient clinic of the Charité—University Medicine Berlin or were referred by specialized cooperating clinicians. All participants were diagnosed with an ASD according to DSM-IV (American Psychiatric Association 2000) using the Autism Diagnostic Observation Schedule (ADOS, Bölte and Poustka 2004) and a semi-structured clinical interview based on the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV, American Psychiatric Association 2000). Assessment was done by a trained clinical psychologist and a specialized medical doctor. For demographic data, see Table 1.

Measures

The *Values in Action Inventory of Strengths* (VIA-IS, Peterson and Seligman 2004) is a self-report questionnaire assessing 24 character strengths, which can be assigned to five factors (*emotional, interpersonal, intellectual and theological strengths,* as well as *strengths of restraint*) (Ruch et al. 2010). For the VIA-IS character strengths and descriptions, see Table 2. Each scale consists of ten items. In total the VIA-IS contains 240 items, which are rated using a five-point Likert scale (1 = "very much unlike me" to 5 = "very much like me"). An example item for the character strength *persistence* is "I never quit a task before it is done". Mean scores for the scales are calculated. In this study, the German version of the VIA-IS was used (Ruch et al. 2010). It demonstrated to be reliable and valid: internal consistencies of the scales ranged from Cronbach's $\alpha = .71$ to .90 (Ruch et al. 2010). In our study, internal consistencies of the scales ranged from Cronbach's $\alpha = .70$ to .91 (ASD) and $\alpha = .84$ to .93 (controls).

The *Satisfaction with Life Scale* (SWLS: Diener et al. 1985) is a five-item instrument measuring global life satisfaction using a seven-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree"). An example item is "I am satisfied with my life". A mean score is calculated. The SWLS is widely used in research and has shown strong internal reliability (Cronbach's $\alpha = .87$) (Diener et al. 1985) and good discriminant validity (Pavot and Diener 1993). In the present study, Cronbach's α were .80 (ASD) and $\alpha = .88$ (controls).

Procedure

Participants with ASD completed the questionnaires online and received 15 €. A matched control group was randomly selected from a large data pool which was collected through the website www.charakterstaerken.org hosted by the University of Zürich. All questionnaires were completed anonymously. All parts of the study were conducted according to the declaration of Helsinki and following local

Table 1 Demographics

	ASD	Control	*p*
Gender (male/female)	21/11	20/12	.79[b]
Age (years)	30.9 ± 8.4	30.9 ± 8.4	.99[a]
Education (years)	14.0 ± 2.9	13.8 ± 2.9	.70[a]
Nationality (German/Austrian/Swiss)	(32/0/0)	(19/11/2)	<.001[b]
Housing*	(11/4/3/11/3)	(10/11/5/6/0)	.08[b]
Relationship status**	(6/24/2)	(10/20/2)	.50[b]
Currently working (yes/no)	11/21	12/20	.79[b]
Satisfaction with life (SWLS)	2.9 ± 1.2	4.5 ± 1.4	.00[a]

p values reflect level of significance from *t* test for independent [a] samples and [b] Chi square

Values are given in mean ± SD

* Housing (alone/with spouse/shared apartment/with parents/other)

** Relationship status (married/single/divorced)

ethical standards. All subjects provided written informed consent. Statistical analyses were performed with the statistical software IBM SPSS 22. Accounting for multiple testing, corrected levels of significance were administered using the false discovery rate procedure proposed by Benjamini and Hochberg (1995).

Results

Group Comparisons Mean Scores VIA-IS

Multivariate analysis of variance with the 24 scales of the VIA-IS as dependent variables and group (ASD/control) as the fixed factor were computed. All assumptions for conducting a MANOVA were met. There was a significant main effect of group, indicating that individuals with ASD and controls differed regarding the endorsement of character strengths, $F(24, 39) = 5.36$, $p < .001$; Wilk's $\Lambda = .23$, partial $\eta^2 = .77$. For a full display of results, see Table 3.

Ipsative Ranking and Signature Strengths

We assigned ipsative ranks to individual strengths scores, from 1 (highest) to 24 (lowest), resulting in a specific ranking order for each participant. Based on that ranking, we identified the five most highly ranked strengths for each individual (which are referred to as signature strengths) and calculated percentages for how often a certain strength belonged to the signature strengths in each group (see Table 4).

To reveal group differences between these percentages, we conducted chi square tests (see Littman-Ovadia and Lavy 2012) for those strengths that were ranked within the top five for at least one of the groups (*open-mindedness, authenticity, love of learning, creativity, fairness, humour, kindness, love*). *Creativity* was significantly more often a signature strength in ASD (χ^2 (1, $N = 64$) = 5.74, $p = .02$) than in controls, while *love* (χ^2 (1, $N = 64$) = 5.85, $p = .02$) and *humour* (χ^2 (1, $N = 64$) = 10.47, $p < .01$) were significantly more often signature strengths in controls. There were no significant differences between groups regarding the other character strengths.

Satisfaction with Life and Character Strengths

Satisfaction with life was significantly lower in ASD ($M = 2.9$, SD = 1.2) than in controls ($M = 4.5$, SD = 1.4), t (62) = 4.76, $p < .001$). Pearson correlations with the 24 character strengths of the VIA-IS and the SWLS were conducted. Descriptively, the two groups had the strongest associations between *hope* and *zest* with SWL, respectively. In addition, *kindness, social intelligence, teamwork* and *humour* were most strongly related to SWL in ASD, while for controls *persistence, curiosity, perspective,* and *humour* were most strongly correlated with SWL. For a complete display of correlations, see Table 5.

Discussion

Endorsement of Character Strengths

The ASD group scored mostly lower on those character strengths that can be classed as *interpersonal* (e.g., *teamwork, kindness*) and *emotional* (e.g., *social intelligence, love*) *strengths* but did not differ from controls on most *intellectual strengths* and *strengths of restraint*, which is in line with Samson and Antonelli (2013). This also corroborates a study from Strunz et al. (2014), who assessed individuals with ASD without intellectual impairment using the NEO Personality Inventory-Revised (NEO-PI-R)

Table 2 The 24 Character Strengths included in the Values in Action Inventory of Strengths (VIA-IS, Peterson and Seligman 2004) and short descriptions (Ruch et al. 2010, Harzer and Ruch 2014)

Emotional strengths	
VIA 9	**Zest *(enthusiasm):*** Approaching life with excitement and energy
VIA 22	**Hope *(optimism):*** Expecting the best and working to achieve it
VIA 6	**Bravery *(courage):*** Not shrinking from threat, challenge, difficulty or pain
VIA 23	**Humour *(playfulness):*** Liking to laugh and joke, bringing smiles to other people
VIA 10	**Love:** Capacity to love and be loved, valuing close relations with others
VIA 12	**Social intelligence:** Being aware of the motives and feelings of self and others, knowing what to do to fit into different social situations
Interpersonal strengths	
VIA 11	**Kindness *(generosity):*** Doing favours and good deeds for others, helping others and taking care
VIA 13	**Teamwork:** Working well as a member of a group or team, being loyal to the group
VIA 14	**Fairness:** Treating all people the same according to notions of fairness and justice
VIA 15	**Leadership:** Taking care of a group and its members, organizing activities and seeing that they happen
VIA 16	**Forgiveness:** Forgiving those who have done wrong, giving people a second chance
VIA 17	**Modesty:** Letting one's accomplishments speak for themselves, not regarding oneself as more special than one is
Intellectual strengths	
VIA 1	**Creativity *(originality):*** Thinking of novel and productive ways to do things, including but not limited to artistic achievements
VIA 2	**Curiosity *(interest):*** Taking an interest in all of ongoing experience, findings subjects and topics fascinating, exploring and discovering
VIA 3	**Open-mindedness *(judgement):*** Thinking things through and examining them from all sides, not jumping to conclusions; being able to change one's mind in light of evidence
VIA 4	**Love of learning:** Enjoyment of mastering new skills, topics, and bodies of knowledge
Strengths of restraint	
VIA 7	**Persistence *(perseverance):*** Finishing what one starts, persisting in a course of action in spite of obstacles
VIA 18	**Prudence:** Being careful about one's choices; not saying or doing things that might later be regretted
VIA 19	**Self-regulation:** Regulating what one feels and does
VIA 5	**Perspective:** Being able to provide wise counsel to others, having ways of looking at the world that make sense to oneself and to other people
VIA 8	**Authenticity *(honesty):*** Speaking the truth and presenting oneself in a genuine way
Theological strengths	
VIA 24	**Spirituality *(religiousness):*** Having coherent beliefs about the higher purpose and meaning of life
VIA 21	**Gratitude:** Being aware of and thankful for the good things that happen
VIA 20	**Appreciation of beauty:** Noticing and appreciating beauty, excellence, and/or skilled performance in all domains of life

and found them to be as intellectually curious, as dutiful and to strive as much for achievements as controls. We found *open-mindedness* to be the highest ranked character strength in ASD, but in contrast to Samson and Antonelli (2013) we did not find individuals with ASD to score higher on *open-mindedness* than controls.

Signature Strengths

In ASD, the most frequent *signature strengths* were *open-mindedness (intellectual strengths), authenticity (strength of restraint), love of learning (intellectual strength), creativity (intellectual strength), and fairness (interpersonal strength).* In comparison, *open-mindedness (intellectual strength), fairness (interpersonal strength), humour (emotional strength), kindness* (*interpersonal strength)* and *love (emotional strength)* were most often in the signature strengths profile of controls.

Individuals who score high on *open-mindedness* think things through, examine aspects from all sides, weigh the pros and cons carefully and do not jump to conclusions impulsively (Harzer and Ruch 2014). Following the theory of systemizing (Baron-Cohen et al. 2003), individuals with ASD seek to discover the "truth" by looking for lawful patterns and they are more likely to base their judgment on rules (e.g., weighing pros and cons) rather than on information which comes from empathizing (Baron-Cohen 2009). Also, *fairness* and *authenticity*, which are within the most typical signature strengths in individuals with ASD, can be facilitated by the trend to systemize. *Fairness* consists of treating all people the same according to principles of fairness and justice, and individuals who endorse

Table 3 Character strengths in individuals with ASD and neurotypical control individuals

			M	SD	95 % CI	*p*				M	SD	95 % CI	*p*
Emotional strengths							*Intellectual strengths*						
VIA 9	**Zest**	ASD	2.91	0.72	[2.66, 3.16]	**.004***	VIA 1	Creativity	ASD	3.51	0.63	[3.27, 3.75]	.645
		Control	3.43	0.68	[3.18, 3.68]				Control	3.43	0.72	[3.19, 3.67]	
VIA 22	**Hope**	ASD	2.85	0.78	[2.57, 3.13]	**.004***	VIA 2	**Curiosity**	ASD	3.25	0.69	[3.02, 3.47]	**.005***
		Control	3.44	0.79	[3.16, 3.71]				Conlrol	3.72	0.59	[3.49, 3.95]	
VIA 6	Bravery	ASD	3.15	0.65	[2.93, 3.38]	.103	VIA 3	Open-mindedness	ASD	3.73	0.60	[3.52, 3.93]	.323
		Control	3.42	0.63	[3.19, 3.65]				Conlrol	3.87	0.55	[3.67, 4.07]	
VIA 23	**Humour**	ASD	2.99	0.64	[2.76, 3.22]	**<.001***	VIA 4	Love of Learning	ASD	3.48	0.77	[3.23, 3.72]	.172
		Control	3.79	0.64	[3.57, 4.02]				Control	3.72	0.62	[3.47, 3.96]	
VIA 10	**Love**	ASD	2.88	0.61	[2.63, 3.12]	**<.001***	*Strengths of restraint*						
		Control	3.69	0.76	[3.44, 3.93]		VIA 7	Persistence	ASD	3.08	0.83	[2.80, 3.36]	.097
VIA 12	**Social intelligence**	ASD	2.42	0.53	[2.22, 2.62]	**<.001***			Control	3.41	0.74	[3.14, 3.69]	
		Control	3.65	0.61	[3.45, 3.85]		VIA 18	Prudence	ASD	3.29	0.57	[3.11, 3.48]	.852
Interpersonal strengths									Control	3.32	0.49	[3.13, 3.51]	
VIA 11	**Kindness**	ASD	3.05	0.69	[2.83, 3.27]	**<.001***	VIA 19	Self-regulation	ASD	2.99	0.64	[2.76, 3.22]	.146
		Control	3.88	0.53	[3.66, 4.09]				Control	3.23	0.65	[2.30, 3.45]	
VIA 13	**Teamwork**	ASD	3.00	0.63	[2.79, 3.21]	**<.001***	VIA 5	**Perspective**	ASD	3.01	0.62	[2.80, 3.22]	**<.001***
		Control	3.66	0.56	[3.45, 3.87]				Control	3.60	0.56	[3.39, 3.81]	
VIA 14	Fairness	ASD	3.43	0.63	[3.23, 3.63]	**.001***	VIA 8	Authenticity	ASD	3.64	0.49	[3.48, 3.80]	.188
		Control	3.90	0.49	[3.70, 4.10]				Control	3.79	0.43	[3.63, 3.95]	
VIA 15	**Leadership**	ASD	2.79	0.74	[2.56, 3.01]	**<.001***	*Theological strengths*						
		Control	3.62	0.52	[3.39, 3.84]		VIA 24	Spirituality	ASD	2.04	0.80	[1.73, 2.35]	.013
VIA 16	**Forgiveness**	ASD	2.81	0.67	[2.59, 3.03]	**<.001***			Control	2.60	0.93	[2.29, 2.90]	
		Control	3.46	0.59	[3.24, 3.69]		VIA 21	**Gratitude**	ASD	2.90	0.62	[2.69, 3.10]	**<.001***
VIA 17	Modesty	ASD	3.19	0.59	[2.99, 3.39]	.947			Control	3.55	0.54	[3.34, 3.76]	
		Control	3.20	0.53	[3.00, 3.40]		VIA 20	Appreciation of beauty	ASD	3.11	0.72	[2.88, 3.35]	.011
									Control	3.54	0.59	[3.31, 3.78]	

N = 32 in both groups

Benjamini and Hochberg (1995) corrected significance level $q < .03$

Bolded values with * indicate statistical significance

Confidence intervals are bootstrapped

the character strength *authenticity* speak the truth and present themselves in a genuine way (Harzer and Ruch 2014). There are anecdotal reports that individuals with ASD adhere to social rules in a deterministic way (such as sharing things equally or telling the truth). More evidence towards strengths in *authenticity* and *fairness* in individuals with ASD comes from other studies. Izuma et al. (2011) found individuals with ASD to be less likely to adapt their behaviour in order to improve their social reputation than neurotypical controls and we found individuals with ASD to have fewer social stereotypes against ethnic minorities compared to a neurotypical control group (Kirchner et al. 2012). Another character strength belonging to the most frequent signature strengths in individuals with ASD—and significantly more often than in controls—was *creativity*. Individuals who endorse *creativity* as a character strength consider themselves as original thinkers and like to come up with new and different ideas (Harzer and Ruch 2014). Empirical evidence regarding *creativity* being a strength in individuals with ASD comes from a study from Liu et al. (2011), who found them to score higher on originality and elaboration. In addition, in a previous study we identified creativity as the second most common approach in pursuing one's special interest (after systemizing) in individuals with ASD (Kirchner & Dziobek 2014). The fifth character strength, which belonged to the most common signature strengths in individuals with ASD, was *love of learning,* which comprises the eagerness to master new skills, topics and bodies of knowledge (Harzer and Ruch 2014). Already Asperger (1944) described individuals with ASD to be able to acquire an astonishing body of knowledge in their special interests, often through self-guided studying.

Table 4 Ranking of signature strengths

		ASD					Control		
		Rank	N	%			Rank	N	%
VIA 3	Open-mindedness	1	20	63	VIA 3	Open-mindedness	2	16	50
VIA 8	Authenticity	2	19	59	VIA 14	Fairness	2	16	50
VIA 4	Love of learning	3	17	53	VIA 23	Humour	2	16	50
VIA 1	Creativity	4	15	47	VIA 11	Kindness	4	12	38
VIA 14	Fairness	5	11	34	VIA 10	Love	5	11	34
VIA 18	Prudence	6	10	31	VIA 2	Curiosity	6	10	31
VIA 6	Bravery	8	9	28	VIA 4	Love of Learning	7,5	9	28
VIA 7	Persistence	8	9	28	VIA 13	Teamwork	7,5	9	28
VIA 17	Modesty	8	9	28	VIA 21	Gratitude	9	8	25
VIA 2	Curiosity	10	8	25	VIA 7	Persistence	11	7	22
VIA 11	Kindness	11	7	22	VIA 8	Authenticity	11	7	22
VIA 5	Perspective	12	6	19	VIA 12	Social Intelligence	11	7	22
VIA 20	Appreciation of beauty	13,5	5	16	VIA 20	Appreciation of beauty	13,5	6	19
VIA 13	Teamwork	13,5	5	16	VIA 1	Creativity	13,5	6	19
VIA 23	Humour	15	4	13	VIA 22	Hope	15,5	5	16
VIA 9	Zest	18	3	9	VIA 5	Perspective	15,5	5	16
VIA 10	Love	18	3	9	VIA 6	Bravery	19	4	13
VIA 19	Self-regulation	18	3	9	VIA 15	Leadership	19	4	13
VIA 21	Gratitude	18	3	9	VIA 17	Persistence	19	4	13
VIA 22	Hope	18	3	9	VIA 18	Prudence	19	4	13
VIA 16	Forgiveness	21	2	6	VIA 19	Self-regulation	19	4	13
VIA 24	Spirituality	22	1	3	VIA 9	Zest	23	3	9
VIA 12	Social intelligence	23,5	0	0	VIA 16	Forgiveness	23	3	9
VIA 15	Leadership	23,5	0	0	VIA 24	Spirituality	23	3	9

Rank, N and % refer to how often the character strength was within the top-five character strengths of an individual in the respective group (ASD/Control)

Character Strengths and Satisfaction with Life

Interestingly, we found *hope*, *zest, kindness, humour, social intelligence* and *teamwork* (all *emotional* or *interpersonal* strengths) to have the strongest positive associations with SWL in the ASD group. This is in contrast to Samson and Antonelli (2013), who found only *hope* to be associated with SWL in ASD.[1] One possible interpretation is that higher levels of *emotional* and *interpersonal strengths* contribute to higher SWL in ASD, which would underline the importance of training social and emotional competencies in this population. In line with that, Mazurek (2014) found loneliness to be associated with decreased levels of SWL in ASD, while greater quantity and quality of friendships were associated with decreased loneliness.

In addition to the importance of certain character strengths for SWL, it is also fruitful to consider the fit between environment and tasks (e.g., at work) with the character strengths of an individual. For example, Harzer and Ruch (2012) found neurotypical individuals who applied their signature strengths at work to report more positive experiences. Thus future studies should evaluate how exercising character strengths, and signature strengths in particular, can contribute to the improvement of outcomes (e.g., SWL, work satisfaction, etc.) in ASD.

The results of this study should be interpreted with the following limitations in mind: All collected data are self-reported data. For future studies we recommend to also use a peer-rating form for the character strengths questionnaire (Ruch et al. 2010). The size of our research sample was relatively small, which limits the generalization of the findings. Furthermore, we might have missed effects between groups due to limited statistical power and no causational inferences can be drawn due to the cross-sectional design of our study.

[1] Controls in our and Samson and Antonellis study (2013) had comparable associations between character strengths and SWL with previous work (Peterson et al. 2007; Ruch et al. 2010), (i.e., *hope*, *zest, persistence, perspective* were among those character strengths with the strongest associations with SWL).

Table 5 Correlations between VIA-IS character strengths and SWLS

		ASD	*p*	Control	*p*
VIA-22	Hope	**.672*** [.413, .857]	**<.001**	**.787*** [.622, .893]	**<.001**
VIA-9	Zest	**.602*** [.288, .807]	**<.001**	**.727*** [.450, .891]	**<.001**
VIA-11	Kindness	**.491*** [.195, .738]	**.004**	.235 [−.062, .529]	.196
VIA-23	Humour	**.466*** [.204, .677]	**.007**	**.539*** [.223, .776]	**.001**
VIA-12	Social Intelligence	**.464*** [.206, .687]	**.008**	**.476*** [.105, .741]	**.006**
VIA-13	Teamwork	**.458*** [.200, .649]	**.008**	**.503*** [.249, .719]	**.003**
VIA-16	Forgiveness	.389 [.072, .649]	.028	**.429*** [.133, .661]	**.014**
VIA-21	Gratitude	.367 [−.061, .761]	.039	**.356*** [.008, .637]	.045
VIA-20	Appreciation of beauty	.365 [−.040, .689]	.040	.087 [−.207, .344]	.636
VIA-6	Bravery	.363 [−.022, .600]	.041	**.536*** [.118, .778]	**.002**
VIA-15	Leadership	.343 [.039, .598]	.055	.406 [.044, .653]	.021
VIA-14	Fairness	.337 [−.029, .598]	.059	.300 [−.005, .560]	.095
VIA-7	Persistence	.336 [−.062, .672]	.060	**.644*** [.390, .814]	**<.001**
VIA-24	Spirituality	.330 [−.030, .637]	.066	**.436*** [.122, .683]	.013
VIA-2	Curiosity	.269 [−.124, .588]	.137	**.634*** [.353, .791]	**<.001**
VIA-19	Self-regulation	.224 [−.246, .626]	.217	.340 [−.056, .620]	.057
VIA-10	Love	.207 [−.152, .615]	.257	**.519*** [.118, .794]	.002
VIA-1	Creativity	.199 [−.077, .472]	.275	.319 [−.074, .608]	.075
VIA-5	Perspective	.188 [−.205, .509]	.303	**.576*** [.310, .761]	**.001**
VIA-18	Prudence	.175 [−.230, .502]	.339	.133 [−.351, .549]	.467
VIA-17	Modesty	.158 [−.240, .446]	.387	−.031 [−.405, .362]	.867
VIA-8	Authenticity	.142 [−.243, .521]	.437	.300 [−.109, .619]	.095
VIA-4	Love of learning	.125 [−.270, .456]	.494	.338 [−.146, .681]	.059
VIA-3	Open-mindedness	−.149 [−.479, .190]	.415	.130 [−.335, .475]	.478

N = 32 in both groups

Benjamini and Hochberg (1995) corrected significance level $q < .02$

Bolded values with * indicate statistical significance

95% CI are reported in [ ]

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Contribution of Authors JK conceived of the study and its design, coordinated study with co-authors, performed statistical analysis, interpreted the data and drafted the manuscript. WR helped to conceive of the study, collected data, participated in statistical analysis and gave feedback on manuscript. ID helped to conceive of the study, participated in the interpretation of the data and helped to draft the manuscript. All authors read and approved the final manuscript.

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