

# Brilliant: But What For? Meaning and Subjective Well-Being in the Lives of Intellectually Gifted and Academically High-Achieving Adults

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**Abstract** Not much is known today about relationships between giftedness and well-being, particular among adults. The present article examined if highly gifted people manage to live meaningful and happy lives in their adult years. Two aspects of giftedness were taken into account: intellectual giftedness, and academically high achievement. Representatives of both groups were compared with each other and a control group with regard to meaningfulness and subjective well-being, respectively. Furthermore, predictors for both facets of well-being were examined. The sample consisted of 198 Intellectually Gifted, 141 academically High Achievers, and 136 control subjects. Results: High Achievers showed degrees of meaningfulness and subjective well-being that were comparable to those of the control group. The Intellectually Gifted, however, reported significantly lower values in both facets of well-being. Results of hierarchical multiple regressions indicated that Intellectually Gifted and High Achievers follow a different path towards meaningfulness and subjective well-being. Among the Intellectually Gifted, generativity is the strongest predictor for meaningfulness, whereas for the High Achievers, meaningful work is most central to their meaningfulness. As regards subjective well-being, self-compassion was established as the strongest predictor for the Intellectually Gifted, whereas development was the most important predictor for the High Achievers.

**Keywords** Giftedness · Achievement · Meaningfulness · Subjective well-being · Adults

## 1 Introduction

While lots of effort is devoted to the assessment of giftedness, not much is known about the lives of highly gifted people in their adult years. Do they manage to employ their capacities in a way that is meaningful and healthy in their own view? Is it easier for them to live

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happy lives, or probably more difficult than for averagely gifted individuals? Answers to these questions are of high relevance to gifted individuals, but also companies, institutions, and society will benefit from refined knowledge about the corollary of giftedness in adulthood. Valuable resources are lost when gifted individuals do/cannot live up to their potential. The present study aimed at investigating predictors of meaningfulness and subjective well-being in highly gifted individuals—and arrived at partly surprising results.

## 2 Giftedness

In the literature, different conceptions of giftedness are used (cf. Sternberg and Davidson 2005). Whereas some authors define giftedness as a multidimensional construct (e.g. Gagné 2005; Heller et al. 2005; Renzulli 2005), other authors argue for a unidimensional conceptualization (e.g. Rost 2009). Despite this common problem of operationalization, most authors agree that high general intelligence is a/the core criterion of intellectual giftedness (e.g. Vock et al. 2013; Wirthwein and Rost 2011a). In most cases, individuals with an IQ of at least 130—that is scoring at or above the 98th percentile on a general intelligence test—are labeled as intellectually gifted (Rost 2013). Another criterion often engaged to define the gifted, is achievement (Preckel and Vock 2013; Ziegler and Raul 2000). In comparison to intellectual giftedness, no universally agreed definition of outstanding achievement exists. Awards, honors, recognitions by evaluators and colleagues or high achievement test performance are commonly used to operationalize (outstanding) achievement (Ziegler and Raul 2000).

Numerous studies have focused on the relationship between intelligence and achievement. They revealed a medium to strong correlation between intellectual abilities and academic achievement (e.g. Deary et al. 2007; Leeson et al. 2008; Rohde and Thompson 2007) as well as occupational success (e.g. Danner et al. 2011; Schmidt and Hunter 2004). But even though the importance of intelligence as a predictor for achievement is undisputable, research also shows that “there is still anywhere from 51 to 75 % of the variance in academic achievement that is unaccounted for by measures of general cognitive ability alone” (Rohde and Thompson 2007, p. 83). As regards occupational achievement, the picture is similar. According to Schneider (2000), individual differences in intellectual abilities are not the crucial determinant for exceptional performances in later life. Instead, non-cognitive factors, such as motivation, endurance, family environment, school support systems, and personality characteristics seem mainly responsible for high academic and occupational achievement (Reis and McCoach 2000; Schneider 2000). These results also imply that intellectually gifted individuals are not necessarily highly achieving individuals, and individuals with outstanding achievements are not necessarily intellectually gifted.

In light of these findings, we share the view (e.g. Vock et al. 2013; Wirthwein and Rost 2011b) that intellectually gifted and high achieving individuals are overlapping but distinct groups. Because it is not only about “the level of our intelligence but [also] what we achieve with this intelligence” (Sternberg et al. 2008, p. 392), we believe that a dual conceptualization of giftedness may enhance the knowledge about gifted individuals. Thus, we adopted Wirthwein’s (2010) distinction of giftedness as a fundamental skill (potential) and giftedness as true high performance. In the present study, adults who were either known to be intellectually gifted or academically high achieving were compared with each other and a non-labeled control group with regard to their well-being.

### 3 Giftedness and Well-Being

An important research question in the literature on giftedness concerns the relationship between giftedness and well-being. Already in 1999, Neihart (p. 10) noted that “there is a long history of interest in how giftedness affects psychological well-being.” Two conflicting views dominated the research: on the one hand, researchers argued that giftedness is a protective factor against maladjustment. It was hypothesized that due to their cognitive capacities, gifted children can cope better with stress, conflicts and asynchronous development. Researchers supporting the contrasting view argued that because of their cognitive capacities, gifted children are more sensitive to interpersonal conflicts and stress. They therefore expected that giftedness increases the children’s vulnerability. Both views could claim theoretical and empirical evidence (cf. Neihart 1999). Summarizing the results of numerous studies, Neihart (1999) concludes that gifted children are not more or less at-risk for psychological problems than non-gifted children. It is important to note that these results are limited to children and adolescents. Thereby another problem, which is particularly salient in research on giftedness, is addressed: the predominant concentration on children and adolescents.

As Sekowski and Siekanska (2008, p. 155) note, “among the numerous publications on the gifted that have appeared within the last 100 years, merely 13–14.2 % deal with adults.” Wirthwein and Rost (2011a), too, conclude that there is a lack of studies of gifted adults. Of those, only very few have explicitly explored well-being (e.g. Dijkstra et al. 2012; Lubinski et al. 2006). They either found no significant association, or weak positive correlations between intelligence and well-being. Analyses based on the longitudinal Marburg Giftedness Project (Rost 2009; Wirthwein and Rost 2011a) have shown no statistically significant differences in various components of well-being between gifted and non-gifted participants from childhood to young adulthood. As Wirthwein and Rost (2011a, p. 183) note, due to various limitations of studies with gifted adults, it is “impossible to draw reliable and valid conclusions about the subjective well-being of gifted adults.” One of these limitations concerns the fact that the operationalization of well-being in these studies is just as varied as those of giftedness.

### 4 Well-Being

Most authors agree that well-being is a complex and multidimensional construct. Since the publication of *Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment* (Waterman 1993), psychological research on well-being has been increasingly guided by this distinction. Both concepts—hedonia and eudaimonia—originate in ethical philosophy and represent the efforts, especially of Aristotle, to answer questions regarding the nature of a good or well-lived life. Broadly defined, the hedonic view refers to the idea that a good life is characterized by the presence of pleasure or happiness, and the absence of pain (Kahnemann et al. 1999). Therefore Diener’s (1984) concept of subjective well-being—with the three major components positive experience, negative experience and life satisfaction—has often been related to the hedonic approach of well-being. While there is a broad consensus that pleasure, enjoyment, and satisfaction is core to the definition of hedonic well-being, eudaimonic well-being is harder to pin down (Huta and Waterman 2014).

A eudaimonic orientation—so coined in reference to Aristotle’s concept of eudaimonia, focuses on the life lived well, not the pleasurable life. Grounded in self-knowledge, volition, and intentionality, a eudaimonic life is oriented by goals that are coherent with communal values and personal sources of meaning (Schnell 2013, 2014). It is attained through the full expression of one’s human potential (Ryan and Deci 2001), or, more specifically, by personal growth, self-acceptance, purpose in life, autonomy, environmental mastery, and positive relationships (Ryff and Singer 2008). While a eudaimonic orientation is not necessarily accompanied by subjective well-being (McMahan and Estes 2011), it is known to be strongly associated with a sense of meaning in life (Huta and Ryan 2010; McMahan and Renken 2011; Steger et al. 2008). Quoting the philosopher David Norton, Ryff and Singer note that “eudaimonia translates to ‘meaningful living conditioned upon self-truth and self-responsibility’ (p. xi)” (Ryff and Singer 2008, p. 18). Meaningfulness can therefore be viewed as a—if not *the*—central indicator of a presence of a eudaimonic orientation (cf. Huta and Ryan 2010). Closely related to the various aspects of eudaimonia, meaningfulness is defined as “a fundamental sense of meaning, based on an appraisal of one’s life as coherent, significant, directed, and belonging” (Schnell 2009, p. 487).

## 5 The Present Study

Today, especially in the field of positive psychology, there is an ongoing debate about the need to distinguish hedonic and eudaimonic well-being, and the problems related to this distinction (e.g. Huta and Waterman 2014; Kashdan et al. 2008; Straume and Vittersø 2012; Vittersø and Søholt 2011). In the context of giftedness-research, most studies have focused on constructs linked with hedonic well-being (e.g. Dijkstra et al. 2012; Sekowski and Siekanska 2008; Wirthwein and Rost 2011a). Hence, not much is known so far about the relationships between giftedness and eudaimonic well-being. As noted previously, meaning/purpose in life is widely recognized as a core element of eudaimonic well-being (e.g. Deci and Ryan 2008; Delle Fave et al. 2011; Fowers et al. 2010; Keyes 2002; Ryff and Singer 2008). Since no study to our knowledge has investigated the relationships between meaning in life and giftedness so far, the primary concern of the present study was to shed more light on this issue. As we recognize that eudaimonic *and* hedonic elements are central to the study of well-being, we considered meaningfulness and subjective well-being as indicators for both facets of well-being.

According to previous findings on the relationships between giftedness and well-being (Dijkstra et al. 2012; Wirthwein and Rost 2011a), we hypothesized that gifted and non-gifted adults do not differ in their meaningfulness and subjective well-being. However, given their (literally) extraordinary status, we assumed that highly gifted adults might follow different paths towards well-being than non-gifted adults. Thus, we also examined predictors of meaningfulness and subjective well-being among highly gifted adults, in comparison to a control group from the general population.

Research on predictors of meaningfulness and subjective well-being has repeatedly highlighted the role of goal pursuit and self-acceptance (Ryan and Deci 2001; Ryff 2014; Sheldon and Hoon 2013). Perceiving one’s life as meaningful and feeling well thus seems to depend on an active and involved lifestyle, on one hand, and on a positive, accepting view of one-self, on the other hand.

There are many different ways of expressing an active and involved lifestyle. Especially in research on meaning in life, some effort has gone into identifying the sources of a

fulfilled life. In a large qualitative research program, Schnell (2004, 2009) identified 26 sources of meaning. They are defined as “commitments to different areas of life from which meaning is derived” (2011, p. 667). In the current study, only those eight sources of meaning that have been shown to specifically contribute to the prediction of meaningfulness (Schnell 2011) were considered: they are explicit religiosity (faith in a personal god), spirituality (belief in a supernatural reality), generativity (engagement for the greater good and coming generations), development (personal growth and goal striving), power (influence and dominance), creativity (aesthetic sense and originality), practicality (a hands-on, realistic and direct stance), and harmony (balance and accord with oneself and others) (Schnell 2011).

One important sphere of life—and therefore pertinent to eudaimonic and hedonic well-being—is work. According to Judge and Klinger (2008), there is a strong and consistent relationship between job satisfaction and well-being. Since work constitutes a major element of many people’s identity, it should have a great potential for meaning making (Schnell 2010). Accordingly, data show that meaning in work is strongly related to life meaning, as well as to satisfaction with life, physical health and positive mood (Pollet 2011). In the context of giftedness, Wirthwein and Rost (2011a) found that only satisfaction with work contributed to the prediction of general life satisfaction among gifted adults. Because work is such a central part of most people’s life, Judge and Klinger (2008, p. 393) conclude that “no research on subjective well-being can be complete without considering subjective well-being at work.” Thus, we also included experiences at work (i.e. meaningful work and joy of working) as predictors for meaningfulness and subjective well-being.

With specific regard to the gifted, also satisfaction with school has been shown to be an important predictor for general life satisfaction (Ash and Huebner 1998). An explanation for this finding is offered by Wirthwein and Rost (2011a). They assume that school (and work) have “a higher relevance for gifted individuals because they, given their high intellectual potential, are more successful in these domains” (Wirthwein and Rost 2011a, p. 185). In light of this finding, experiences at school were also considered as predictors.

As noted above, besides an active and involved lifestyle, a positive, accepting view of one-self has been shown to be important for well-being. One concept closely linked to an accepting view of oneself is self-compassion. Originating in Buddhist Psychology, Neff (2003a, p. 92) defines self-compassion as a “positive emotional stance toward oneself.” Self-compassion entails three overlapping and interacting components: (1) treating oneself kindly when things go wrong, (2) recognizing that problems, failure and feelings of inadequacy are part of the common human experience, and (3) being in balanced awareness of one’s painful thoughts and feelings (Neff 2003a, b). Research has shown that self-compassion is positively associated with various aspects of well-being, such as optimism, feelings of competence, relatedness, or life satisfaction (Neff 2009, 2003b). Additionally, self-compassion has been found to be linked to intrinsically motivated behavior and personal initiative (Neff 2009, 2003a). As indicated in the literature, giftedness is often accompanied by unrealistically high expectations, perfectionism, and self-criticism (Brackmann 2007; Holahan and Holahan 1999; Mendaglio 2012; Silverman 1999). Self-compassion might therefore be a protective factor for the gifted’s meaningfulness and subjective well-being. On these grounds, we considered self-compassion not only as predictor for meaningfulness and subjective well-being, but also tested for an interaction between giftedness and self-compassion.

## 6 Methods

### 6.1 Procedure

According to Wirthwein's (2010) distinction between giftedness as a fundamental skill (potential) and giftedness as true high performance, two different samples have been recruited.

Representatives for *giftedness as potential* are Austrian and German members of the intellectual giftedness association Mensa (hereafter referred to as *Intellectually Gifted*). Membership in Mensa is granted to individuals who score at the 98th percentile or higher on acknowledged, standardized intelligence tests. Contact persons named on the Austrian and German Websites of Mensa were contacted via e-mail and asked to forward to their members a short description of the study and the link to the online-survey.

Representatives for *true high performance* are Austrian academic award winners, who obtained their doctorate *sub auspiciis praesidentis rei publicae* (hereafter referred to as *High Achievers*). To qualify for this honor, someone must graduate from high school with distinction, pass university exams at bachelor's, master's and doctoral level within a given time and with the highest possible grade, and must also receive a distinction on the doctoral thesis. Contact details of all 724 award winners were provided by the Austrian Federal Ministry of Science, Research and Economy. Awardees who lived in Austria were sent a letter with a description of the study and a personal code, providing access to the online-survey.

Additionally, a sample of randomly selected Austrian residents, who neither were labeled as intellectually gifted nor as academically high achieving, was contacted by post and invited to complete the online-survey (control group).

### 6.2 Participants

Altogether, 479 persons participated. Given the difficulty to reach the highly particular subgroups of gifted individuals, sample sizes can be considered notable. After cleaning the data, the remaining sample ( $N = 475$ ) consisted of 198 Intellectually Gifted, 141 High Achievers, and 136 control subjects. Just over half of the sample was male (57 %), with a mean age of 48 years (ranging from 19 to 83,  $SD = 14$ ). The mean age of the female participants was 43 years (ranging from 18 to 84,  $SD = 13$ ). Twenty-one percent of the respondents were single, 12 % lived with a partner, and 57 % were married. Fifty-six percent had one or more children. Educational level was classified into five groups: Three percent had general education, 11 % had completed apprenticeship or vocational secondary school, 18 % were high school graduates, 33 % had graduated from university, and the remaining 35 % were holders of a doctoral degree. The majority (79 %) of the sample was in work (21 % self-employed). Eleven percent of the participants were retired and the remaining 10 % were housewives/househusbands, in training, or jobless. Almost half of the employed participants (48 %) had a management position. According to the RIASEC model (Holland 1997), 14 % worked in a realistic profession, 27 % in an investigative, 3 % in an artistic, 19 % in a social, 15 % in an enterprising, and 22 % in a conventional profession. Detailed information of the three groups is given in Table 1.

### 6.3 Measures

*Fluid intelligence* was assessed by the *mini-q intelligence screening test* (Baudson and Preckel 2016). The test presents 64 sentences, each followed by a figure (e.g. “The triangle prefers the circle.” [symbols of “filled square”, “filled triangle”, “filled circle”]). Within a limited time frame of 4 min, respondents had to decide if the sentences describe the figures correctly or not. The total score is the sum of correct answers, ranging from 0 to 64.

#### 6.3.1 Outcome Measures

Subjective *meaningfulness* was measured by the Meaningfulness scale from the well-validated *Sources of Meaning and Meaning in Life Questionnaire* (SoMe; Schnell 2009; Schnell and Becker 2007). The five-item scale uses a six-point Likert response format. Cronbach alpha is .80; sample item: “I have a task in my life.”

The widely used and validated *WHO-5 Wellbeing Index* (WHO-5; Brähler et al. 2007) was employed to measure *subjective well-being*. Its five items (six-point Likert scale: “At no time” to “All of the time”, during the last two weeks; Cronbach’s  $\alpha = .85$ ) measure the subjective quality of life, based on positive mood (e.g. “I have felt cheerful and in good spirits.”) and vitality (e.g. “I woke up feeling fresh and rested.”).

#### 6.3.2 Potential Predictors of Meaningfulness and Subjective Well-Being

The SoMe (Schnell and Becker 2007) also assesses 26 *sources of meaning*. Scales measure the degree of commitment to these 26 orientations in thought and action, thus covering goal-directed behavior. In the current study, only those sources of meaning that have been shown to specifically contribute to the prediction of meaningfulness (Schnell 2011) have been used. As noted above, these are: explicit religiosity (3 items; e.g. “Religion plays an important role in my life.”;  $\alpha = .93$ ), spirituality (5 items; e.g. “Everyone’s fate is predestined.”;  $\alpha = .74$ ), generativity (6 items; e.g. “I strive to do something for future generations.”;  $\alpha = .82$ ), development (6 items; e.g. “I’m always on the lookout for tasks that will teach me something.”;  $\alpha = .80$ ), power (5 items; e.g. “I like to be able to influence other people.”;  $\alpha = .73$ ), creativity (5 items; e.g. “I live my life imaginatively.”;  $\alpha = .89$ ), practicality (8 items; e.g. “I need to see clear results at the end of a working day.”;  $\alpha = .80$ ), and harmony (8 items; e.g. “I strive for inner peace and balance.”;  $\alpha = .86$ ).

To assess *self-compassion*, the German version of the Self-Compassion Scale (SCS-D; Hupfeld and Ruffieux 2011; Neff, 2003b) was used. The reliable and valid scale consists of 26 items (five-point Likert scale; e.g. “I’m intolerant and impatient towards those aspects of my personality I don’t like”; Cronbach’s  $\alpha = .90$ ).

Two single-item measures were included to assess a retrospective evaluation of *school experiences*. We asked participants to rate the demands put on them during their years in school as either (a) unchallenging, as (b) adequately demanding, or (c) overextending. We also asked if their intellectual potential had been (a) not considered, (b) appreciated, or (c) appreciated and promoted.

Two scales have been used to measure *experiences at work*. *Meaningful work* was assessed by the *meaningful work scale* (Höge and Schnell 2012; Schnell et al. 2013). Its six items (six-point Likert scale; Cronbach’s  $\alpha = .91$ ) measure experiences of work as fulfilling, significant, directed, coherent with life goals, and contributing to a sense of belonging (e.g. “My work matches with my life purpose”). A newly developed scale,

**Table 1** Sample characteristics

	Intellectually gifted (N = 198)	High achievers (N = 141)	Control group (N = 136)	Effect size (group differences)
Age	40/10 (M/SD)	53/14 (M/SD)	47/16 (M/SD)	$\eta^2 = 0.15$ ; $p < 0.001$
Gender <sup>a</sup>	101 (51 %)	44 (31 %)	61 (45 %)	$\chi^2 = 8.63$ ; $p = 0.01$
Family status <sup>b</sup>	116 (59 %)	115 (82 %)	86 (63 %)	$\chi^2 = 13.88$ ; $p < 0.001$
Children <sup>c</sup>	84 (42 %)	96 (68 %)	86 (63 %)	$\chi^2 = 15.59$ ; $p < 0.001$
Education <sup>d</sup> : Ph.D.	20 (10 %)	141 (100 %)	7 (5 %)	$\chi^2 = 241.83$ ; $p < 0.001$
Education: university	119 (60 %)	0 (%)	39 (29 %)	$\chi^2 = 86.30$ ; $p < 0.001$
Education: high school	43 (22 %)	0 (%)	40 (29 %)	$\chi^2 = 32.46$ ; $p < 0.001$
Occupational status <sup>e</sup>	165 (83 %)	120 (85 %)	89 (65 %)	$\chi^2 = 13.99$ ; $p < 0.001$
Employment <sup>f</sup>	39 (24 %)	17 (14 %)	22 (25 %)	$\chi^2 = 4.46$ ; $p = 0.11$
Position <sup>g</sup>	44 (35 %)	76 (74 %)	21 (31 %)	$\chi^2 = 45.35$ ; $p < 0.001$

<sup>a</sup> Gender: female

<sup>b</sup> Family status: living with a partner/spouse

<sup>c</sup> Children: one or more children

<sup>d</sup> Education: Ph.D

<sup>e</sup> Occupational status: in work

<sup>f</sup> Employment: self-employed (Intellectually Gifted N = 165, High Achievers N = 120, Control Group N = 89)

<sup>g</sup> Position: management (Intellectually Gifted N = 126, High Achievers N = 103, Control Group N = 67)

adapted from the instrument for *Diagnosis of Health-Promoting Work* (DigA; Ducki 2000), was employed to measure *joy of working*. The eight-item scale uses a six-point Likert response format (sample item: “In general, my work inspires me”; Cronbach’s  $\alpha = .94$ ).

## 6.4 Statistical Analyses

Firstly, the three subgroups were tested for demographic differences. In a next step, they were tested for expected differences in intelligence, using ANCOVA. Further group differences with regard to the outcome variables, i.e. meaningfulness and subjective well-being, were then analyzed through a MANCOVA. To test for an interaction effect between group membership and self-compassion (low vs. high self-compassion), the MANCOVA was run with these two factors as independent variables. Furthermore, the three subgroups were tested for potential differences in the predictor variables. For the ANCOVAs and the MANCOVA, post hoc tests (Šidák correction) were conducted to compare main effects between the three groups. Finally, in order to determine predictors of meaningfulness and subjective well-being for each of the three subsamples, six hierarchic multiple regressions

**Table 2** Cronbach alpha ( $\alpha$ ), means, standard deviations (SD) for Intellectually Gifted (IG), High Achievers (HA), and Control Group (CG), effect sizes and correlations

	Mean/SD		Effect size (eta)		Correlation		
	IG (N = 198)	HA (N = 141)	CG (N = 136)	Group differences	Fluid intelligence	Meaningfulness	Subjective well- being
1. Age	40/10	53/14	47/16	.15***	<b>-0.49</b>	<b>0.29</b>	<b>0.21</b>
2. Gender <sup>a</sup>	1.49/0.50	1.69/0.47	1.55/0.50	.03**	<b>-0.20</b>	0.02	<b>0.16</b>
3. Family status <sup>b</sup>	0.59/0.49	0.82/0.39	0.63/0.49	.04***	-0.07	<b>0.22</b>	<b>0.11</b>
4. Children <sup>c</sup>	0.4/0.50	0.7/0.47	0.6/0.49	.05***	<b>-0.24</b>	<b>0.35</b>	<b>0.14</b>
5. Education <sup>d</sup>	4	5	3	.88***	-0.01	<b>0.11</b>	0.08
6. Fluid intelligence (0-64)	50.94/10.07	40.21/11.75	36.38/12.16	.18***	-	<b>-0.27</b>	<b>-0.24</b>
7. Meaningfulness (0-5; $\alpha = .80$ )	2.65/1.09	3.46/1.03	3.35/0.91	.07***	<b>-0.27</b>	-	<b>0.50</b>
8. Subjective well-being (0-25; $\alpha = .85$ )	12.46/5.27	15.38/4.64	15.15/4.99	.04***	<b>-0.24</b>	<b>0.50</b>	-
9. Explicit religiosity (0-5; $\alpha = .93$ ) <sup>f</sup>	1.03/1.39	1.92/1.83	1.86/1.59	.05***	<b>-0.22</b>	<b>0.45</b>	<b>0.17</b>
10. Spirituality (0-5; $\alpha = .74$ )	1.82/1.16	1.95/1.10	2.54/1.18	.04***	<b>-0.15</b>	<b>0.49</b>	<b>0.11</b>
11. Generativity (0-5; $\alpha = .82$ )	2.87/1.05	3.34/0.89	3.07/1.00	.02*	<b>-0.17</b>	<b>0.65</b>	<b>0.24</b>
12. Development (0-5; $\alpha = .80$ )	3.93/0.74	3.94/0.70	3.63/0.80	.01	0.08	<b>0.36</b>	<b>0.24</b>
13. Power (0-5; $\alpha = .73$ )	2.88/1.00	2.90/0.96	2.89/0.95	.00	-0.04	<b>0.26</b>	<b>0.18</b>
14. Creativity (0-5; $\alpha = .89$ )	2.97/1.14	3.31/0.92	2.93/1.19	.01	-0.05	<b>0.31</b>	<b>0.17</b>
15. Practicality (0-5; $\alpha = .80$ )	2.64/0.73	2.71/0.77	3.29/0.81	.07***	<b>-0.22</b>	<b>0.16</b>	<b>0.10</b>
16. Harmony (0-5; $\alpha = .86$ )	3.32/0.84	3.56/0.81	3.66/0.80	.02**	<b>-0.18</b>	<b>0.47</b>	<b>0.23</b>
17. Self-compassion (1-5; $\alpha = .90$ )	3.03/0.65	3.31/0.52	3.19/0.44	.01	<b>-0.17</b>	<b>0.40</b>	<b>0.49</b>
18. School experiences: demands <sup>e</sup>	0.24/0.43	0.68/0.47	0.73/0.45	.18***	<b>-0.26</b>	<b>0.20</b>	<b>0.20</b>
19. School experiences: appreciation (1-3)	1.52/0.64	2.33/0.62	1.79/0.64	.12***	<b>-0.10</b>	<b>0.28</b>	<b>0.26</b>
20. Meaningful work (0-5; $\alpha = .91$ )	3.01/1.14	4.00/0.75	3.42/1.04	.06***	<b>-0.17</b>	<b>0.52</b>	<b>0.42</b>

Table 2 continued

	Mean/SD			Effect size (eta)		Correlation	
	IG (N = 198)	HA (N = 141)	CG (N = 136)	Group differences	Fluid intelligence	Meaningfulness	Subjective well- being
21. Joy of working (0–5; $\alpha = .94$ )	3.03/1.21	4.10/0.73	3.53/1.03	.10***	–0.16	0.47	0.47

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.005$ ; \*  $p < 0.05$ ; bold: significant ( $p \leq 0.05$ ; two sided)

<sup>a</sup> Gender: female = 1, male = 2

<sup>b</sup> Family status: living alone = 0, living with a partner/spouse = 1

<sup>c</sup> Children: no children = 0, one or more children = 1

<sup>d</sup> Education: median; effect size calculated with median test; general education = 1, apprenticeship/vocational secondary school = 2, high school = 3, university = 4, Ph.D. = 5

<sup>e</sup> School experiences: demands: unchallenging/overextending = 0, adequately demanding = 1

<sup>f</sup> Scale transformed (log transformation) due to non-normality

were carried out. In consecutive steps, the following predictors were entered: (1) demographic variables (age, gender, family status, and children), and (2) further predictors (sources of meaning, self-compassion, experiences in school, and experiences at work) (because experiences at work were included in the regression model, N was here reduced to working participants).

## 7 Results

### 7.1 Descriptive Statistics

Descriptive statistics (means and standard deviations), effect sizes of group differences, and correlations of fluid intelligence, meaningfulness and subjective well-being with relevant variables are displayed in Table 2. Groups differed with regard to age, gender, family status, children, and education. Therefore, all demographics were included as covariates in subsequent analyses.

### 7.2 Group Differences with Regard to Fluid Intelligence, Meaningfulness, Subjective Well-Being and the Predictor Variables

The one-way ANCOVA, which tested for differences in the study group's fluid intelligence, was significant at ( $F(2,468) = 51.16, p < 0.001, \eta^2 = 0.18$ ). Šidák corrected post hoc comparisons indicated that there was a significant difference between the three groups ( $p < 0.001$ , respectively). As Table 2 shows, values were highest among the Intellectually Gifted, followed by the High Achievers.

The two-way MANCOVA, which was performed to investigate differences in meaningfulness and subjective well-being, also came to a significant effect between the three groups ( $F(4,926) = 8.81, p < 0.001$ ; Wilks-Lambda = .93;  $\eta^2 = 0.04$ ). Also when the two dependent variables were considered separately, using a Bonferroni adjusted alpha level of .025, results indicated significant differences between the three groups (meaningfulness:  $F(2,464) = 15.52, p < 0.001, \eta^2 = 0.07$ ; subjective well-being:  $F(2,464) = 9.16, p < 0.001, \eta^2 = 0.04$ ). For meaningfulness, Šidák corrected post hoc comparisons showed that the adjusted mean score for the Intellectually Gifted was significantly lower than that of the High Achievers ( $p = 0.001$ ) and the Control Group ( $p < 0.001$ ). High Achievers and Control Group did not differ from each other ( $p = 0.99$ ). Post hoc comparisons related to subjective well-being showed similar results. Whereas High Achievers and Control Group did not differ from each other ( $p = 0.99$ ), the Intellectually Gifted showed significantly lower values than High Achievers ( $p = 0.02$ ) and the Control Group ( $p = 0.001$ ).

As regards group differences in the predictor variables, ANCOVAs showed nine (out of thirteen) significant differences: they concerned explicit religiosity, spirituality, generativity, practicality, harmony, school experiences related to demands and appreciation, meaningful work, and joy of working. As Table 2 shows, for all variables values were lowest among the Intellectually Gifted.

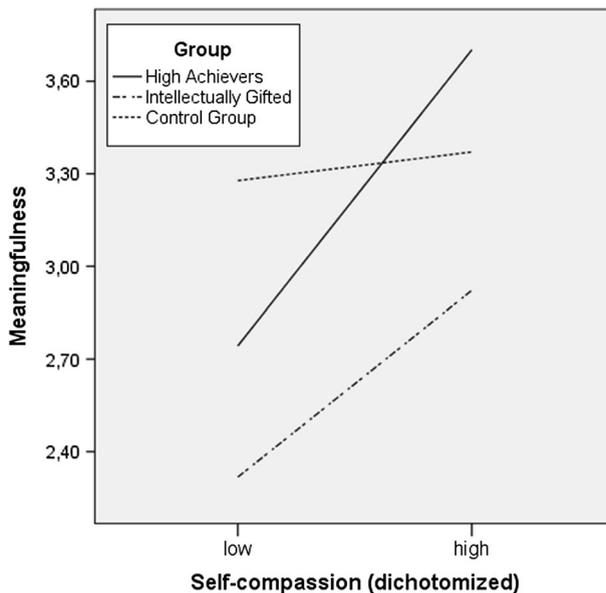
The interaction effect of Group  $\times$  Self-compassion was significant, too ( $F(4,926) = 3.02, p = 0.02$ ; Wilks-Lambda = .97;  $\eta^2 = 0.01$ ). In this case, when meaningfulness and subjective well-being were considered separately (Bonferroni adjusted alpha level of .025), a significant difference was only established for meaningfulness ( $F(2,464) = 4.04,$

$p = 0.02$ ,  $\eta^2 = 0.02$ ). As Fig. 1 shows, both gifted groups benefitted much more from self-compassion than their control counterparts. Results related to the main effect of self-compassion—which was not part of our research questions and is therefore only reported for the sake of completeness—were significant, too ( $F(2,463) = 30.31$ ,  $p < 0.000$ ; Wilks-Lambda = .88;  $\eta^2 = 0.12$ ). This also applied when meaningfulness ( $F(1,464) = 25.68$ ,  $p < 0.001$ ,  $\eta^2 = .05$ ) and subjective well-being ( $F(1, 464) = 55.69$ ,  $p < 0.001$ ,  $\eta^2 = 0.11$ ) were considered separately. For both meaningfulness and subjective well-being, post hoc comparisons indicated higher values among self-compassionate respondents.

### 7.3 Predictors of Meaningfulness and Subjective Well-Being

In six hierarchic multiple regressions, predictors of meaningfulness and subjective well-being were established. All six regressions were significantly different from zero. After Step 1, with demographics in the equation, variables entered in Step 2 explained additional variance in all six regressions. Altogether, the predictors accounted for 72 % of the variance in meaningfulness among the Intellectually Gifted ( $F(16,148) = 23.19$ ,  $p < 0.001$ ), 76 % of the variance among the High Achievers ( $F(16,103) = 0.64$ ,  $p < 0.001$ ), and 57 % of the variance in the Control Group ( $F(16,72) = 6.00$ ,  $p < 0.001$ ). Table 3 displays confidence intervals, regression weights, explained variances, and change statistics for meaningfulness for each of the three samples.

In the Intellectually Gifted Group, variables from both levels—demographics (children) and further predictors (sources of meaning, meaningful work and self-compassion)—contributed to the explanation of variance in meaningfulness. Within the sources of meaning, generativity was the strongest predictor, followed by development, spirituality, and creativity. Despite of the positive bivariate correlation with meaningfulness, the



**Fig. 1** Interaction between group-membership and self-compassion as predictors of meaningfulness

**Table 3** Hierarchic multiple regressions to predict **meaningfulness** for Intellectually Gifted (IG; N = 165), High Achievers (HA; N = 120) and the Control Group (CG; N = 89): bivariate correlations (r), confidence intervals (CI), beta weights (β), explained variance (R<sup>2</sup>), and change statistics (ΔR<sup>2</sup>)

	Intellectually Gifted				High Achievers				Control Group				
	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	
<i>Step 1</i>													
Age		-0.02, 0.02	0.02			-0.00, 0.03	0.16				-0.01, 0.03	0.16	
Gender <sup>a</sup>		-0.60, 0.10	-0.14			-0.51, 0.29	-0.05				-0.43, 0.31	-0.04	
Family status <sup>b</sup>		-0.25, 0.45	0.05			-0.15, 0.92	0.14				-0.73, 0.16	-0.17	
Children <sup>c</sup>		0.31, 1.02	0.32***	0.13		-0.25, 0.66	0.09	0.09			-0.15, 0.78	0.18	0.06
<i>Step 2</i>													
Age	0.12	-0.01, 0.01	0.02		<b>0.23</b>	-0.01, 0.01	-0.01		0.18	-0.01, 0.02	0.08		
Gender	-0.11	-0.27, 0.11	-0.04		-0.01	-0.43, 0.03	-0.09		-0.03	-0.34, 0.27	-0.02		
Family status	<b>0.19</b>	-0.05, 0.39	0.08		<b>0.21</b>	-0.10, 0.54	0.08		-0.01	-0.32, 0.42	0.03		
Children	<b>0.33</b>	0.12, 0.57	0.17**		<b>0.21</b>	-0.17, 0.37	0.05		0.19	-0.36, 0.36	-0.00		
Explicit religiosity <sup>e</sup>	<b>0.20</b>	-0.29, 0.63	0.04		<b>0.53</b>	0.22, 1.19	0.20*		<b>0.51</b>	0.52, 1.73	0.36***		
Spirituality	<b>0.48</b>	0.07, 0.29	0.20**		<b>0.54</b>	0.01, 0.29	0.16*		<b>0.39</b>	-0.05, 0.25	0.14		
Generativity	<b>0.66</b>	0.31, 0.54	0.42***		<b>0.62</b>	0.13, 0.47	0.24***		<b>0.52</b>	-0.03, 0.35	0.18		
Development	<b>0.43</b>	0.15, 0.48	0.22***		<b>0.34</b>	-0.13, 0.24	0.04		<b>0.30</b>	-0.02, 0.43	0.18		
Power	<b>0.22</b>	-0.13, 0.09	-0.02		<b>0.23</b>	-0.12, 0.16	0.02		0.07	-0.25, 0.13	-0.06		
Creativity	<b>0.19</b>	-0.22, -0.04	-0.14*		<b>0.42</b>	-0.04, 0.25	0.09		<b>0.32</b>	-0.12, 0.16	0.03		
Practicality	0.01	-0.19, 0.08	-0.04		0.01	-0.11, 0.17	0.02		0.16	-0.13, 0.26	0.07		
Harmony	<b>0.34</b>	-0.06, 0.19	0.05		<b>0.52</b>	-0.10, 0.25	0.06		<b>0.41</b>	0.01, 0.41	0.20*		
Self-compassion	<b>0.30</b>	0.14, 0.46	0.18***		<b>0.49</b>	0.12, 0.56	0.18*		0.12	-0.16, 0.56	0.10		
School experiences (demands) <sup>d</sup>	-0.05	-0.23, 0.24	0.00		0.03	-0.35, 0.11	-0.06		-0.03	-0.38, 0.26	-0.03		

Table 3 continued

	Intellectually Gifted			High Achievers			Control Group			
	r	CI	$\beta$	R <sup>2</sup>	$\Delta R^2$	r	CI	$\beta$	R <sup>2</sup>	$\Delta R^2$
School experiences (appreciation)	0.01	-0.27, 0.06	-0.06			<b>0.31</b>	0.19, 0.54	0.21***		
Meaningful work	<b>0.47</b>	0.15, 0.33	0.26***	0.72	0.59***	<b>0.61</b>	0.19, 0.54	0.27***	0.76	0.67***

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.005$ ; \*  $p < 0.05$ ; 95 % CI, upper and lower bounds of 95 % confidence intervals around b; bold: significant ( $p \leq 0.05$ ; two sided)

<sup>a</sup> Gender: female = 1, male = 2

<sup>b</sup> Family status: living alone = 0, living with a partner/spouse = 1

<sup>c</sup> Children: no children = 0, one or more children = 1

<sup>d</sup> School experiences—demands: unchallenging/overextending = 0, adequately demanding = 1

<sup>e</sup> Explicit religiosity scale has been transformed (log transformation)

predictor weight for creativity was negative, thus indicating a suppression effect. Among High Achievers, meaningful work was the most important predictor. Generativity, school experiences related to the appreciation of one's intellectual potential, explicit religiosity, self-compassion, and spirituality also contributed to the prediction of meaningfulness of High Achievers. In the Control Group, only explicit religiosity, meaningful work, and harmony were predictive.

For subjective well-being, less variance was explained: 35 % of the variance among the Intellectually Gifted ( $F(16,148) = 5.02, p < 0.001$ ), 49 % of the variance among High Achievers ( $F(16,103) = 6.30, p < 0.001$ ), and 43 % of the variance in the Control Group's subjective well-being ( $F(16,72) = 3.34, p < 0.001$ ). Table 4 contains confidence intervals, regression weights, explained variances, and change statistics for subjective well-being for each of the three samples. In the Intellectually Gifted Group, only self-compassion and joy of working contributed to the explanation of variance in subjective well-being. Among High Achievers, development was the strongest predictor, followed by harmony and self-compassion. In the Control Group, joy of working was the most important predictor. Self-compassion and practicality also contributed to the explanation of variance in the Control Group's subjective well-being, as well as children—albeit with a negative regression weight.

## 8 Discussion

Generally, intelligence is a highly valued asset. It is positively associated with several outcomes, such as educational and vocational success, income, goal attainment, health, or life satisfaction (cf. Diener 1984; Diener and Fujita 1995; Rost 2013). It is therefore not surprising that intelligence is the best researched issue in scientific psychology (Rost 2013, p. 11). However, this changes when it comes to giftedness. Because gifted individuals are, by definition, only a small group within the general population, accessibility to this research field is difficult. It becomes even more challenging when gifted *adults* are to be examined. In the present study, we investigated if gifted people manage to live meaningful and happy lives in their adult years. With intellectual giftedness and high achievement, two aspects of giftedness have been taken into account. High Achievers are characterized by a documented history of outstanding success in school and university, up to Ph.D.-level. The Intellectually Gifted are members of the high IQ society Mensa, fulfilling the membership criterion of an IQ > 129. Both were compared with each other as well as with a randomly sampled, unlabeled control group.

We used a screening measure of fluid intelligence, the mini-q (Baudson and Preckel 2016), to have an additional indication of the groups' giftedness over and above their identification as member of Mensa or recipient of honors for outstanding success in education. In line with our expectation, members of Mensa showed the highest values in fluid intelligence, followed by the High Achievers. Both outperformed the control group. It should be noted, however, that the mini-q is not yet a standardized intelligence test, and further validation is needed for a sound interpretation of its results.

### 8.1 Meaningfulness and Subjective Well-Being of Gifted Adults and Controls

According to our data, High Achievers showed degrees of meaningfulness and subjective well-being comparable to those of non-gifted individuals. The Intellectually Gifted,

**Table 4** Hierarchic multiple regressions to predict **subjective well-being** for Intellectually Gifted (IG; N = 165), High Achievers (HA; N = 120) and the Control Group (CG; N = 89): bivariate correlations (r), confidence intervals (CI), beta weights (β), explained variance (R<sup>2</sup>), and change statistics (ΔR<sup>2</sup>)

	Intellectually Gifted				High Achievers				Control Group				
	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	r	CI	β	R <sup>2</sup> ΔR <sup>2</sup>	
<i>Step 1</i>													
Age		-0.09, 0.10	0.01			-0.10, 0.06	-0.05				-0.08, 0.15	0.08	
Gender <sup>a</sup>		-0.67, 2.51	0.09			-1.14, 2.61	0.07				-0.69, 3.56	0.15	
Family status <sup>b</sup>		-2.07, 1.58	-0.02			-3.19, 1.79	-0.06				-1.73, 3.36	0.08	
Children <sup>c</sup>		-1.72, 2.04	0.02	0.01		-0.62, 3.63	0.15	0.02			-4.03, 1.31	-0.14	0.05
<i>Step 2</i>													
Age	0.01	-0.12, 0.06	-0.05		0.01	-0.10, 0.03	-0.09		0.07	-0.10, 0.10	-0.00		
Gender	0.09	-0.79, 2.04	0.06		0.05	-0.94, 2.10	0.06		0.19	-0.20, 3.81	0.19		
Family status	-0.01	-1.74, 1.40	-0.02		0.00	-3.17, 1.07	-0.09		0.07	-1.94, 2.84	0.05		
Children	0.02	-1.71, 1.61	-0.01		0.11	-0.45, 3.11	0.13		-0.06	-5.12, -0.37	-0.28*		
Explicit religiosity <sup>e</sup>	0.05	-1.94, 4.85	0.07		<b>0.20</b>	-2.43, 3.99	0.05		0.04	-1.85, 6.18	0.12		
Spirituality	-0.01	-0.89, 0.69	-0.02		<b>0.20</b>	-0.82, 1.00	0.02		-0.07	-0.65, 1.25	0.07		
Generativity	0.12	-0.84, 0.86	0.00		<b>0.28</b>	-1.86, 0.38	-0.13		0.01	-1.46, 0.96	-0.05		
Development	<b>0.24</b>	-0.57, 1.92	0.09		<b>0.48</b>	0.63, 3.07	<b>0.28**</b>		-0.02	-2.21, 0.79	-0.11		
Power	0.10	-0.87, 0.73	-0.01		<b>0.29</b>	-0.58, 1.27	0.07		-0.02	-2.07, 0.39	-0.16		
Creativity	0.11	-0.61, 0.73	0.01		<b>0.34</b>	-0.60, 1.36	0.07		0.03	-0.38, 1.45	0.13		
Practicality	-0.11	-1.30, 0.65	-0.05		-0.01	-0.70, 1.13	0.04		0.19	0.46, 3.04	<b>0.30*</b>		
Harmony	0.11	-0.69, 1.19	0.04		<b>0.41</b>	0.37, 2.66	<b>0.26*</b>		0.00	-1.91, 0.75	-0.10		
Self-compassion	<b>0.50</b>	1.88, 4.25	<b>0.38***</b>		<b>0.48</b>	0.46, 3.46	<b>0.23*</b>		<b>0.39</b>	1.44, 6.27	<b>0.35**</b>		
School experiences (demands) <sup>d</sup>	0.08	-1.69, 1.75	0.00		0.03	-1.59, 1.46	-0.01		0.07	-0.98, 3.17	0.11		

**Table 4** continued

	Intellectually Gifted			High Achievers			Control Group								
	r	CI	$\beta$	R <sup>2</sup>	$\Delta R^2$	r	CI	$\beta$	R <sup>2</sup>	$\Delta R^2$	r	CI	$\beta$	R <sup>2</sup>	$\Delta R^2$
School experiences (appreciation)	<b>0.23</b>	-0.86, 1.58	0.05	0.05		0.15	-0.76, 1.60	0.05	0.05		0.15	-1.73, 1.51	-0.02		
Joy of working	<b>0.41</b>	0.45, 1.76	0.26**	0.35	0.34***	<b>0.53</b>	-0.04, 2.40	0.18	0.49	0.47***	<b>0.41</b>	0.84, 2.78	0.39***	0.43	0.38***

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.005$ ; \*  $p < 0.05$ ; 95 % CI = upper and lower bounds of 95 % confidence intervals around  $\beta$ ; bold: significant ( $p \leq 0.05$ ; two sided)

<sup>a</sup> Gender: female = 1, male = 2

<sup>b</sup> Family status: living alone = 0, living with a partner/spouse = 1

<sup>c</sup> Children: no children = 0, one or more children = 1

<sup>d</sup> School experiences—demands: unchallenging/overextending = 0, adequately demanding = 1

<sup>e</sup> Explicit religiosity scale has been transformed (log transformation)

however, reported significantly lower values in both facets of well-being. Hence, our hypotheses, based on previous findings on the relationships between giftedness and subjective well-being (e.g. Dijkstra et al. 2012; Wirthwein and Rost 2011a), were only partly confirmed. General statements such as “many gifted children grow up to become happy and well-adjusted experts in their fields” (Winner 2000, p. 165), or “the gifted appear to be doing fine” (Lubinsky and Benbow 2000, p. 147) may therefore be misleading (see also Plucker and Levy 2001).

Instead, our findings highlight the necessity to distinguish between intellectual giftedness and high intellectual achievement. What might account for the differences in well-being between the two groups we have analyzed here? One of the most notable differences between them is the substantially higher fluid intelligence among the Intellectually Gifted. Although no studies to our knowledge have investigated associations between intelligence and meaning in life, or eudaimonic well-being, there is accumulated evidence for a positive link between intelligence and suicidality (Voracek 2007). A re-analysis of the Terman Genetic Study of Genius, drawing on a participant pool with an average Stanford Binet IQ of 151, showed a lifetime suicide mortality four times that of the general population (Voracek 2004). Another study by Voracek established a weak but significantly positive correlation between IQ and standardized suicide rate in 99 districts of Austria (Voracek 2007). The author refrains from interpreting this relationship, but refers, in his introduction, to de Cantazaro’s (1981) assumption that “it may take an intelligent animal to know when the situation is hopeless, to realize that purpose for life is removed in those circumstances, and that death can be self-induced” (De Catanzaro 1981, p. 154). From this, Voracek deduces—and finds—that intelligence and suicide mortality should be positively related. Drawing on these and our findings, we could conclude that people with high, or very high, intelligence adopt a more critical attitude towards the world, and avoid relying on so-called positive illusions (Taylor and Browne 1988). Both their meaningfulness and subjective well-being would therefore be restricted. Further studies will be needed to test this hypothesis.

Another major difference between the two groups of the Intellectually Gifted and the High Achievers lies in the selection criterion itself. High achievement is very likely associated with high levels of motivation (Ziegler and Raul 2000). Motivation, in turn, is central to the experience of meaning: according to Ryff and Singer (1998, p. 8), meaning results from “invested, committed living”, and Schnell (2011, 2014) concludes that high levels of meaningfulness come from active involvement in several, preferably diverse purposes. As regards meaningfulness, the attributed “motivational advantage” (Ziegler and Raul 2000, p. 129) of High Achievers might therefore be an explanation for their higher degree of meaningfulness in comparison to the Intellectually Gifted.

## 8.2 Predictors of Meaningfulness and Subjective Well-Being

Alternatively or additionally, it may be assumed that the Intellectually Gifted follow a different path towards meaningfulness and subjective well-being than High Achievers and non-gifted individuals. Wirthwein and Rost (2011a) report that among gifted participants, only satisfaction with work served as an important predictor for general life satisfaction, whereas among the control group, the domains of self and friends additionally contributed to the explanation of variance in satisfaction with life. Other results suggest that besides work, aspects of family life are relevant for life satisfaction of gifted adults (Subotnik et al. 1989).

In order to determine potential predictors of meaningfulness and subjective well-being in the present study, six hierarchical multiple regressions have been carried out. The entered predictors accounted for much greater variance in meaningfulness ( $R^2 = 0.57$  to  $R^2 = 0.76$ ) than in subjective well-being ( $R^2 = 0.35$  to  $R^2 = 0.49$ ).

Demographics were entered in the first step and explained between 6 and 13 % of variance in meaningfulness, and 1–5 % of variance in subjective well-being. In contrast to the findings by Subotnik et al. (1989), our results indicated that having children is relevant for the Intellectually Gifted's meaningfulness, but *not* for their subjective well-being. In the control group, data suggested that children *reduced* subjective well-being. Both findings replicate the 'parenthood paradox' (Baumeister 1991), which refers to the fact that parenthood is largely seen as a positive event, but does not result in an increase of positive affect. Instead, a substantial decrease of subjective well-being has been found again and again (Luhmann et al. 2012). This is compensated, however, by an increase of meaningfulness, as shown by Baumeister et al. (2013). It might be worth noting that in the present study, parents in both gifted samples, in contrast to the control group, do not report lower subjective well-being than their non-parenting counterparts. This finding ties in with Galatzer-Levy and colleagues' results (2011), showing that, among more highly educated parents, subjective well-being appears to remain stable after childbirth.

### 8.3 Sources of Meaning as Predictors of Meaningfulness and Subjective Well-Being

For the Intellectually Gifted generativity was established as the strongest predictor of meaningfulness. Among the High Achievers, generativity came up as second important predictor of meaningfulness, after meaningful work. These findings are in line with previous studies documenting the outstanding role of generativity in the prediction of meaningfulness (Damásio et al. 2013; Schnell 2011; Schnell and Hoof 2012), while they also demonstrate the immense significance that work—and, with it, probably achievement—have for the High Achievers.

Previous research has shown that religiosity can be a source of both meaningfulness and subjective well-being (Emmons 2005; Myers 2008; Schnell 2011, 2012). As regards meaningfulness, these findings have been supported by the current data: explicit religiosity predicted meaningfulness in the Control Group and among the High Achievers. Among the Intellectually Gifted, not explicit religiosity, but spirituality appeared as an important source of meaningfulness. This finding can be related to the debate about intelligence and supernatural belief. Higher levels of intelligence have repeatedly been linked to lower levels of religiosity, in particular to lower levels of religious fundamentalism (Lewis et al. 2011). In contrast to the (somewhat) less intelligent High Achievers and Control Group, explicit religiosity did not serve as significant predictor of meaningfulness among the Intellectually Gifted. But spirituality did, suggesting that this more idiosyncratic and personalized form of approaching the idea of a higher power (cf. Schnell 2012) might be more in line with the cognitive complexity of this group.

An orientation towards development—standing for personal growth and goal striving—contributed to the prediction of meaningfulness among the Intellectually Gifted, and to the prediction of subjective well-being among High Achievers. For the control group, development neither appeared as a significant source of meaningfulness and subjective well-being. The greater salience of development for the gifted can be interpreted in the light of Holahan and Holahan's (1999) finding: living up to one's potential is of particular importance to the well-being of gifted individuals.

## 8.4 Self-Compassion

Another important aspect of well-being is the questions of emotion regulation, here assessed through the concept of self-compassion. Findings from the present study were similar to those of previous studies, which reported positive relations between self-compassion and various aspects of well-being (Neff 2009, 2003a, b). As hypothesized, self-compassion was correlated with both facets of well-being, and, among the two gifted groups, to rather large degrees. Among the Intellectually Gifted and the High Achievers, it contributed to the prediction of both facets of well-being in multiple regressions, whereas in the control group, self-compassion was established as a strong predictor for subjective well-being, only.

The significant interaction between giftedness and self-compassion as predictor of meaningfulness supported our assumption that self-compassion is of particular significance for gifted individuals: As noted by Holahan and Holahan (1999), being labeled as gifted might cause unrealistically high expectations of success, and these, in further consequence, may foster self-devaluations. Following this notion, we suppose that self-devaluations might also cause demotivation. Being self-compassionate, especially treating oneself kindly when things go wrong, might therefore protect the gifted from even greater self-devaluation in comparison to non-gifted individuals, who place realistically or not so high demands on themselves. These findings are of particular interest when it comes to practical implications: helping gifted individuals “to appreciate and accept their achievements within a balanced and realistic view” (Holahan and Holahan 1999, p. 171) might increase their self-compassion and, therefore, their meaningfulness and subjective well-being.

## 8.5 School Experiences

A striking difference between the three groups appeared with regard to their school experiences. First of all, the Intellectually Gifted reported to have experienced much less appreciation than the High Achievers did. Only among High Achievers, the appreciation and promotion of their intellectual potential contributed to the prediction of meaningfulness. A possible explanation for this finding is offered by Ash and Huebner (1998). They hypothesize that for academically gifted students, school experiences turn into an important predictor for life satisfaction due to their positive nature. Although this finding should be interpreted carefully because of the retrospective nature of the evaluation, it clearly points to the necessity to recognize, acknowledge, and further high giftedness in school. The fact that the High Achievers reported much more positive school experiences than the Intellectually Gifted suggests that those who are willing to conform to given standards of achievement might get more positive feedback and acknowledgement—at least in Austria and Germany. It is both a challenge and an imperative to also cater to the needs of those who are more idiosyncratic, original, and/or less aligned in their thinking.

## 8.6 Experiences at Work

In line with previous findings (Subotnik et al. 1989; Wirthwein and Rost 2011a), we found evidence for joy of working being an important source of subjective well-being. In the control group, joy of working showed up as the strongest predictor, and among the Intellectually Gifted, it was the second strongest variable contributing to the prediction of subjective well-being. Only among the High Achievers, joy of working was not predictive.

Meaningful work, however, appeared as a significant source of meaningfulness in all three samples. We assume that the High Achievers, of whom 74 % held a management position, had demanding jobs with high levels of complexity. According to Straume and Vittersø (2012), complex work situations increase inspiration, an indicator of meaningfulness, but decrease happiness. Additionally, they showed that personal growth—often related to demanding jobs—has a stronger effect on inspiration than on happiness.

## 9 Summary

Probably the most surprising finding of this study, calling for further research and practical action, is the diminished meaningfulness and subjective well-being among the Intellectually Gifted. In comparison to the academically High Achievers, they reported demotivating school experiences. They perceived work as much less meaningful and joyful.

As regards the sources of meaning they drew on, they mainly focused on development, while religiosity, generativity, practicality, and harmony were of much less significance than among the High Achievers.

Considering the differences between the Highly Intelligent, the Academically High Achievers, and the control group, and with particular emphasis on the different memories of school experiences and the varying degrees of self-compassion and sources of meaning, the present study provides empirical evidence for Neihart's (1999) conclusion that "giftedness does influence psychological outcomes for people, but whether those outcomes are positive or negative seems to depend on [...] the type and degree of giftedness, the educational fit or lack thereof, and one's personal characteristics" (p. 16f).

Concerning the personal characteristics that have been investigated here as predictors of well-being, the acceptance of the self as it is—as measured by self-compassion—as well as a readiness to change and develop have shown to be relevant for both meaningfulness and subjective well-being. Moreover, work experiences had a strong association with both facets of well-being, thus supporting Judge and Klinger's (2008) notion that experiences at work are essential for research on well-being. Meaningfulness was most consistently related to meaningful work, while subjective well-being was consistently predicted by self-compassion.

Altogether, the wide array of measured variables explained substantially more variance in meaningfulness than in subjective well-being. Pathways towards meaning are therefore not the same as those leading towards subjective well-being, as has also been demonstrated by Baumeister et al. (2013).

## 10 Strengths and Limitations

The present study has strengths as well as limitations. Previous studies about giftedness have often been criticized because of methodological shortcomings. Especially the lack of adequate control groups has been pointed out (Wirthwein and Rost 2011a; Ziegler and Raul 2000). Therefore, one of the study's strengths is the inclusion of a control group. In doing so, multiple comparisons could be made: individuals representing intellectual giftedness and high achievement could be compared with each other as well as with the control group. The simultaneous consideration of indicators of eudaimonic and hedonic well-being

is another strength of the present study. It offered new insights into similarities and differences between eudaimonic and hedonic well-being, with a focus on gifted adults.

Several restrictions have to be noted. Beyond the general limitations of cross-sectional studies, sample selection may constitute a limitation of the present study. Both gifted samples, comprising intellectually gifted and high achieving individuals, have been pre-selected. It is therefore possible that the findings of the present study are not only based on the respondents' high intelligence and high achievement, but on other characteristics of the two groups. For example, the High Achievers are a homogeneous group with regard to their choice of doing a doctorate, and the Intellectually Gifted all chose to become members of a high intelligence society, Mensa.

As noted above, results obtained by employment of the mini-q intelligence screening should be interpreted carefully, since the test is not standardized, yet. The retrospective nature of the evaluation of school experiences constitutes another limitation. The respondents' memories might have been biased by their current situation, resulting in less favorable ratings in the case of the Intellectually Gifted, and more positive responses among the High Achievers.

## 11 Implications for Future Research

Because this study is the first to examine relationships between giftedness and meaningfulness, replication with other samples of intellectually gifted and/or high achieving individuals is warranted. Furthermore, assessment of personality traits would provide additional information. In the current study, with self-compassion only one personality trait has been considered and proved to be an important resource for the respondents' meaningfulness and subjective well-being. Apart from the likely candidates of extraversion and neuroticism, personality traits like self-control, resilience, or locus of control might have similar importance. Elicitation of social background variables will also be helpful. Parents who are themselves highly educated, or who value education highly, can be assumed to nurture their children in a way that will increase their chances of educational success. Therewith, children will have more positive experiences in relation to learning, which might influence their motivation as well as their well-being in later life. From a slightly different perspective, parents who are either particularly empathic or highly gifted themselves, will be more understanding of the needs of their highly gifted children, and able to administer to them.

Last but not least, future research should have another close look at school experiences of gifted individuals. Our finding that the High Achievers reported high appreciation of their potential during school years, but the Intellectually Gifted not, raises the question of possible socialization effects: does a sense of meaning lead to high performance, or does the appreciation and promotion of one's potential/performance increase meaningfulness? Moreover, the assessment of school experiences should be closer to the actual time of experience, to prevent retrospective biases. Therefore, longitudinal studies are more than necessary when it comes to insights about the adult development of highly gifted individuals.

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