



# Correlates of adolescent- and parent-reported grit in a sample of At-Risk youth

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## Abstract

This study examined intrapersonal correlates of adolescent- and parent-reported grit, as well as grit as a protective factor in the relation between adverse experiences and adjustment in a sample of at-risk youth. Data were collected from 110 parent-adolescent dyads (71.8% males). Adolescents ranged in age from 16 to 19 years and were attending a residential military-style intervention program. Parent reports of adolescents' grit were moderately correlated with adolescents' self-reported grit. Within informants, adolescent grit was correlated with better adjustment. Adolescent self-reported grit was also moderately correlated with boldness and personal growth. In a simultaneous regression model, self-efficacy and personal growth contributed unique variance to scores on self-reported grit, and personal growth significantly moderated the relation between adolescent grit and self-reported psychosocial adjustment; however, grit did not moderate the relation between adverse experiences and adjustment. Implications of these results for further understanding resilience in at-risk youth are discussed.

**Keywords** Grit · Adolescence · Adverse childhood experiences · Resilience

## Introduction

Grit is an individual difference construct that has captured the attention of policy makers, leaders, researchers, and educators. Since its initial conceptualization by Duckworth et al. (2007), scholars have theorized about, and empirically investigated, its utility and value. Duckworth and colleagues (2007) conceptualized grit as involving both passion and perseverance of effort. More specifically, grit is the sustainment of interest and effort toward challenges over time regardless of failures and setbacks (Duckworth et al., 2007). Past research has identified grit as a component of resilience and has shown connections of grit to attributes such as self-control and self-efficacy (Duckworth & Gross, 2014; Duckworth et al., 2007; Faust, 2017; Schmidt et al.,

2018; Usher et al., 2019). However, the factor structure of grit and its distinction from other individual difference constructs, such as conscientiousness, has been questioned (Credé et al., 2017). Thus, although grit has been connected to a number of positive psychological constructs with its characteristics alluding to the promotion of success, growth, and self-actualization, more evidence in terms of its relation to, or distinction from, other constructs is needed.

The primary purpose of the present study was to investigate potential adaptive and maladaptive correlates of grit in a sample of at-risk adolescents. Further, the association between grit and adjustment, as well as the role of grit in the relation between adverse childhood experiences (ACEs) and adolescent adjustment, was considered. These issues were particularly important to address in such a sample to further understand the network of correlates of grit prior to adulthood, particularly in a subset of youth who may have varied histories of adverse experiences. Advances in the empirical study of grit and other constructs that may be protective against maladjustment in at-risk youth may lead to development of intervention programs that foster these attributes.

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Notably, grit is a predictor of success for individuals in military training environments as well as in academic and athletic competitions (Duckworth, 2016). Further, grit fosters stability in careers and marriages, and it is linked more closely to academic success and better life outcomes than sheer talent and intelligence (Duckworth, 2016; Eskreis-Winkler et al., 2014). In adolescents, grit mitigates risk of substance use, delinquent behaviors, and suicidal ideation (Guerrero et al., 2016; Marie et al., 2019). Therefore, the clear potential of grit as a protective factor against negative outcomes and a catalyst for positive outcomes begs the question as to what other factors may be related to it and/or foster its development. As such, it is important to understand the various psychosocial constructs that relate to grit, as well as its possible implications for intervention. Further examination of this construct in varied populations and settings is worthwhile and necessary for increased understanding of the intrapersonal, contextual, and behavioral correlates of grit. The present study considered these issues in an at-risk sample of youth, a relatively understudied population in this area of research but one for which consideration and facilitation of grit may be particularly salient. Moreover, the multi-informant design allows examination of whether parents and their teens are congruent in their perceptions of adolescent grit and more comprehensive consideration of its connection to psychological functioning.

### Intrapersonal correlates of grit

Boldness, self-efficacy, and personal growth initiative were considered as possible intrapersonal correlates of grit, given their theoretical and empirical similarities to grit but also because they may present somewhat differently than grit in adolescents. Specifically, these variables were selected because they were thought to confer similar or potentially additional adaptive benefits (e.g., promotion of successful goal achievement, emphasis on personal growth) as grit. As noted above, the examination of these constructs was aimed at expanding knowledge regarding possible overlap between grit and such intrapersonal variables.

Boldness, a component of the triarchic model of psychopathy involves varying degrees of emotional resilience and optimism (Patrick et al., 2009). However, boldness is not typically conceptualized as a positive personality construct or adaptation and opponents of its inclusion in the triarchic model have argued that boldness shares both adaptive and maladaptive qualities (Miller & Lynam, 2012; Somma et al., 2016). Although boldness is associated to some degree with other aspects of the triarchic model (i.e., meanness, disinhibition), it only shares minimal interrelatedness to disinhibition and moderate interrelatedness to meanness

(Patrick et al., 2009). Further, boldness shares connections to self-assurance, adaptability, resilience, and fewer internalizing problems (Nowakowski & Wróbel, 2021; Patrick et al., 2009; Somma et al., 2016), all of which have been considered adaptive qualities. However, where boldness and grit may diverge is in their relation with maladjustment, with the former demonstrating a stronger relation with maladjustment than grit. For instance, boldness has shown an association with manipulativeness, callous affect, dishonesty, and guiltlessness (Driscoll et al., 2014).

Self-efficacy, or the belief in one's ability to acquire and pursue various achievements and goals (Bandura, 1977), also appears to share elements with grit. Bandura (1977) theorized that bolstering self-efficacy may promote optimal psychosocial adjustment and, in turn, increase achievements. Self-efficacy is oriented toward one's belief in their abilities to succeed, whereas grit involves initiating attitudes and behaviors toward long-term goals (Duckworth et al., 2007; Faust 2017). Both self-efficacy and grit share a common pursuit of goals and achievement (Bandura, 1977; Faust, 2017), and this commonality has spurred researchers (e.g., Faust 2017; Usher et al., 2019) to investigate the extent of the relation between grit and self-efficacy. Prior research identified positive correlations between grit, self-efficacy, and academic self-efficacy, with self-efficacy also serving as a mediator of the association between grit and academic outcomes in samples of children, adolescents, and adults (Faust, 2017; Usher et al., 2019). This study sought to extend this research by investigating the association between grit and self-efficacy in a population at-risk for a variety of negative outcomes, as described further below.

Robitschek et al. (2019) conceptualize personal growth initiative (PGI) as a set of skills used for the intentional promotion of development/growth. PGI is associated with psychological well-being, low levels of maladjustment, and improved responsiveness to treatment/intervention outcomes (Blackie et al., 2015; Danitz et al., 2018; Robitschek et al., 2019; Weigold & Robitschek, 2011). PGI is also connected to better psychosocial adjustment in college students and hospital patients (Meyers et al., 2015; Robitschek, 1998), and like grit, it is oriented toward goal achievement and self-actualization. Importantly, personal growth and self-actualization processes are not instantaneous and consequently require perseverance and continual revision to enable success in making desired changes (Danitz et al., 2018; Ivrtzan et al., 2013; Luyckx & Robitschek, 2014; Robitschek, 1998; Tripathi & Moakumla, 2018). For that reason, it may be that adolescents who possess the ability to initiate and fulfill the personal growth process have higher grit and may also have fewer psychosocial difficulties. However, PGI may point to a somewhat more dynamic process

than grit, which is conceptualized as a relatively more stable individual difference construct.

Overall, the intrapersonal variables investigated as correlates of grit may share (a) an association with well-being insofar as they reflect the positive relational, autonomy, sense of purpose, personal mastery, personal growth, and personal development aspects of Ryff's (2014) model of well-being and (b) a shared element of resilience (i.e., adapting/recovering successfully from setbacks). For example, in regards to resilience, boldness may be indicative of those who have an emotional capacity to move forward following setbacks (Nowakowski & Wróbel, 2021), self-efficacy entails a belief that one can successfully complete challenging tasks (Bandura, 1977), and personal growth involves a goal orientation toward improving one's position, including after adversity (Russo-Netzer & Moran, 2018). Each of these variables also appear particularly relevant to the developmental tasks of adolescence, including personal growth and increased autonomy. Given the central focus of grit in this study, we also examined its relation to adjustment from the perspective of multiple informants and as a protective factor against maladjustment for youth who have experienced adverse events.

### At-risk youth

At-risk youth can be described as children or adolescents who come from underserved backgrounds; who are exposed to ACEs (e.g., abandonment, violence); who have a lack of support (e.g., emotional, resources); who are homeless, emancipated, or runaways; and/or those who have chronic medical or psychological problems (Fernandes-Alcantara, 2018). Consequently, the exposure to, and the stress of, those types of experiences impact distal outcomes for these youths (e.g., greater risk of homelessness, greater risk for criminal justice involvement; Fernandes-Alcantara 2018). Given the risk and disadvantage these youth may encounter, it is crucial that research continues to explore potential protective factors among youths who have such experiences.

In consideration of the extant literature, studies on grit are sparse in samples of at-risk youth. Further, in the adolescent literature, there is limited information on informant (e.g., parent)-reported grit. Importantly, there are no known previous studies that have incorporated parent-reported grit within an at-risk sample of youth. As such, this study was conducted with parent-adolescent dyads of at-risk youth who were attending a 22-week residential military program geared toward promoting academic, social, and self-care skills.

### Grit as a protective factor

Importantly, grit may serve as a protective factor against maladjustment for youth who have experienced significant adversity. ACEs are risk factors associated with increased physical and mental health difficulties in adulthood (Felitti et al., 1998; Murphy et al., 2014; Poole et al., 2018). These experiences include childhood incidents of abuse, neglect, oppression, and household dysfunction (Felitti et al., 1998; Poole et al., 2018). Substance abuse, depression, sexual transmitted infections, and cancer are among the many negative outcomes that share a relation with a history of ACEs (Felitti et al., 1998; Murphy et al., 2014; Poole et al., 2018). The ACEs study by Felitti et al. (1998) concluded that each ACE an individual has experienced increases their likelihood of developing a psychological disorder, behavioral problem, and/or physical ailment later in life.

Because of this compound risk, it is imperative to further understand how positive outcomes can be facilitated among youth with a history of ACEs. To that end, grit may serve as a protective factor against the negative outcomes associated with ACEs. For example, those who have persevered in adverse situations with an intent and passion to improve their life circumstances may not exhibit the emotional, behavioral, or social outcomes for which they are otherwise at-risk based on their adverse developmental experiences.

Comparable to ACEs, the consideration of overall psychosocial adjustment presents a unique perspective of the adaptation/promotion of grit and adolescent development. Important domains of adjustment for youth include emotional/internalizing symptoms, conduct problems, hyperactivity/impulsivity, peer relationships, and prosocial behaviors (Goodman, 1997). Past research connects grit to prosocial behavior and inversely with conduct problems (Gouzman et al., 2015; Lan et al., 2019). Thus, grit could provide a buffer against maladaptive functioning across a variety of domains. Furthermore, grit may be a protective factor against maladjustment among youth at-risk for negative outcomes based on early experiences, behavioral history, or academic history.

### Hypotheses

It was hypothesized that: (1) grit would be positively related to boldness, self-efficacy, and PGI; (2) parent- and self-reported grit would be moderately related based on typical cross-informant relations for psychological constructs in children and adolescents (Frick et al., 2020); (3) grit would be negatively related to adolescent maladjustment; and (4) grit would attenuate the expected relation between ACEs and maladjustment.

## Method

### Participants

Participants were 110 parent-adolescent dyads with adolescents ages 16–19 ( $M=16.65$  years,  $SD=0.79$ ). Of the adolescent participants, 79 (71.8%) identified as male, 29 (26.3%) as female, 1 (0.9%) as transgender, and 1 (0.9%) as genderfluid. Regarding race/ethnicity, 74.5% identified as White ( $n=82$ ), 10% as Latino ( $n=11$ ), 6.4% as Mixed Race ( $n=7$ ), 1% as Native North American ( $n=1$ ), 1.8% as Black ( $n=2$ ), 1.8% as Asian ( $n=2$ ), and 4.5% as Other ( $n=5$ ). At the time of the study, adolescents were enrolled in a 22-week quasi-military residential program. Adolescents are referred to the program for a variety of reasons, including court-mandated probation, as an option for obtaining a GED after dropping out of school, and/or to improve behavioral and social functioning. Given their behavioral, legal, and/or educational status, individuals attending this program are considered at-risk for a variety of negative psychosocial outcomes.

### Measures

**Grit Scale (Duckworth et al., 2007)** The Grit Scale is a self-report measure consisting of 12 items (e.g., ‘I am a hard worker’). Responses are made on a five-point scale from ‘Not like me at all’ to ‘Very much like me.’ In the present study, in addition to adolescents providing self-report, items on the Grit Scale were also reworded in the third person (e.g., ‘My child finishes whatever they begin’) to gain parent reports of their child’s grit. Adolescent self-report on the Grit Scale had an internal consistency of  $\alpha=0.85$ , and parent reports had an internal consistency of  $\alpha=0.86$  in the present sample.

**Boldness Scale (Patrick, 2010)** Adolescents completed the 19 items of the Boldness scale from the Triarchic Psychopathy Measure (TriPM; Patrick, 2010). The measure consists of items such as ‘I am well-prepared to deal with stress.’ Responses are made on a 4-point scale (*False, Somewhat false, Somewhat true, True*). Scores on this scale had an internal consistency of  $\alpha=0.82$  in the present study.

**General Self-Efficacy Scale (GSES; Schwarzer & Jerusalem 1995)** The GSES is a 10-item self-report measure of self-efficacy with items regarding one’s self-perceived ability to remain calm, deal with unexpected events, and accomplish goals (e.g., ‘If someone opposes me, I can find ways to get what I want’). GSES items are assessed on a 4-point scale

from ‘Not at all true’ to ‘Exactly true.’ GSES scores had an internal consistency of  $\alpha=0.88$  in the present study.

**Personal Growth and Initiative Scale (PGIS; Robitschek 1998)** The PGIS assesses an individual’s skills related to change in one’s life through 9 items (e.g., ‘I have a specific plan to help me reach my goals’). The PGIS items are on a 6-point scale from ‘Definitely disagree’ to ‘Definitely agree.’ The internal consistency of PGIS scores in the present sample was  $\alpha=0.85$ .

**Adverse Childhood Experiences Questionnaire (ACE-Q; Felitti et al., 1998)** The ACE-Q assesses adverse events that may have occurred during the adolescent’s life, such as divorce, foster care involvement, and justice involvement. The questionnaire asks adolescents to read 19 items and mark how many of the events they have experienced. For privacy purposes, they did not specifically indicate whether they had experienced each event. Thus, scores on the ACE-Q are the number of different events endorsed by the respondent.

**Strengths and Difficulties Questionnaire (SDQ; Goodman 1997)** The SDQ is a 25-item inventory used to assess participants’ psychosocial adjustment, through Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, Peer Relationship Problems, and Prosocial Behavior subscales. Items are assessed on a 3-point response scale, ranging from ‘Not true’ to ‘Certainly true.’ As used in the present study, higher scores on the SDQ are indicative of more adjustment problems; thus, one item from the Conduct Problems subscale (i.e., ‘I usually do as I am told’), two items from the Hyperactivity subscale (i.e., ‘I think before I act;’ ‘my attention is good’), and two items from the Peer Problems (i.e., ‘I have one good friend or more;’ ‘Other people my age generally like me’) are reverse-scored. Further, the Prosocial Behavior subscale was reverse-scored before being combined with other subscale scores to form the SDQ total score. Parents and adolescents each completed the SDQ. For the SDQ total score, the adolescent measure had an internal consistency of  $\alpha=0.80$ , whereas the parent report had an internal consistency of  $\alpha=0.79$ .

### Procedure

This study was approved by the Institutional Review Board at the authors’ affiliated university prior to data collection. Parental consent for participants under the age of 18 was obtained upon adolescents’ arrival at the residential program. Adolescent consent/assent was obtained from each participant before data collection. Parent-report data were

**Table 1** Descriptive Statistics

	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>
Grit	3.40	0.62	2–5	–0.50
Boldness	1.69	0.48	0–3	–0.25
Self-Efficacy	2.95	0.52	1–4	–1.1
Personal Growth Initiative (PGI)	2.86	0.58	2–4	–0.30
ACEs	7.16	4.3	0–17	0.19
Maladjustment	36.04	6.4	23–52	0.40
Parent-Reported Grit	2.62	0.70	2–5	0.34
Parent-Reported Maladjustment	37.48	6.5	23–51	0.04

Note: All variables are adolescent self-report unless otherwise noted

collected upon arrival and administered via paper-and-pencil. The two-week delay in data collection allowed adolescents time to acclimate to the structure of the program. Participation in this study did not impact adolescents' status in the program. Adolescents completed their measures online via a secure website.

## Results

First, we conducted confirmatory factor analyses (CFA) to determine the degree to which the four positive constructs (i.e., grit, boldness, self-efficacy, personal growth initiative) might converge and be reduced to a smaller number of dimensions. None of the tested models fit the data well. More specifically, a one-factor model composed of all 4 measures showed poor fit,  $RMSEA=0.11$ ,  $CFI=0.46$ . A series of three-factor models involved (a) combining grit with boldness with separate self-efficacy and personal growth initiative factors:  $RMSEA=0.10$ ,  $CFI=0.51$ ; (b) combining grit with self-efficacy with separate boldness and personal growth initiative factors:  $RMSEA=0.10$ ,  $CFI=0.52$  and (c) combining grit with personal growth initiative with separate boldness and self-efficacy factors:  $RMSEA=0.10$ ,  $CFI=0.52$  and did not fit the data well. The results support the relative independence of grit from the potential correlates tested in this study.

Descriptive statistics are displayed in Table 1, and correlations between study variables are shown in Table 2. As shown in Table 1, each variable demonstrated an approximately normal distribution (e.g., no significant skewness). As expected (Hypothesis 1), adolescent self-reported grit was moderately correlated with most of the other self-report variables. Specifically, self-reported grit was moderately, positively correlated with boldness. In addition, there was a relatively high correlation between adolescent grit and self-efficacy.

In support of Hypothesis 2, parent reports of adolescents' grit were moderately correlated with adolescents' self-reported grit. Consistent with Hypothesis 3, within informant reports of grit were negatively correlated with maladjustment. Furthermore, parent-perceived grit was negatively correlated with adolescents' reports of their own maladjustment. Adolescent grit was not correlated with ACEs, but as expected, ACEs were related to maladjustment for adolescent informants.

To test Hypothesis 4, a moderated multiple regression was conducted using adolescent-reported grit and ACEs as predictors of adjustment in the first step of the model with the interaction between grit and ACEs entered in the subsequent step. Contrary to our hypothesis, grit did not significantly moderate the relation between self-reported ACEs and adolescent-reported adjustment,  $b=0.11$ ,  $se=0.19$ ,  $p=.58$ . Similar to the self-report analysis, the interaction between parent-reported grit and ACEs did not predict significant variance in parent-reported adjustment,  $b=0.35$ ,  $se=0.22$ ,  $p=.11$ .

## Post Hoc Analyses

Because adolescent self-reported grit was correlated with the other self-perception variables assessed in this study, a simultaneous regression model was used to determine which of the self-reported variables (i.e., boldness, self-efficacy, PGI) contributed unique variance to scores on self-reported grit. There were unique main effects for

**Table 2** Correlations between study variables

	1.	2.	3.	4.	5.	6.	7.	8.
1. Grit	-							
2. Boldness	0.40***	-						
3. Self-Efficacy	0.52***	0.65***	-					
4. PGI	0.49***	0.45***	0.59***	-				
5. ACEs	–0.06	–0.06	–0.09	0.04	-			
6. Maladjustment	–0.52***	–0.58***	–0.48***	–0.41***	0.30**	-		
7. Parent-Reported Grit	0.30**	0.10	0.15	0.14	0.05	–0.21*	-	
8. Parent-Reported Maladjustment	0.01	–0.21*	–0.06	0.02	0.11	0.32**	–0.52***	-

Note: PGI=Personal Growth Initiative; ACEs=Adverse Childhood Experiences. All variables are based on adolescent self-report unless otherwise noted. Higher scores on maladjustment indicate greater difficulties as measured by the SDQ

\* $p<.05$ ; \*\* $p<.01$ ; \*\*\* $p<.001$

self-efficacy,  $\beta=0.33$ ,  $p=.006$ , and PGI,  $\beta=0.28$ ,  $p=.006$ ,  $Model R^2=0.33$ ,  $p<.001$ , but not boldness. Further, multicollinearity was not apparent, as tolerance for each variable was above a 0.20 threshold. Importantly, this model does not speak to temporal relations among the variables in this cross-sectional design.

Subsequent exploratory regression analyses were conducted to determine whether self-efficacy or PGI moderated the relation between self-reported grit and maladjustment in separate models. That is, because of their unique contributions to grit, we were interested in exploring whether self-efficacy or PGI contributed additive effects, in concert with grit, to adolescent adjustment. Of these two models, PGI significantly moderated the relation between grit and self-reported adjustment,  $b = -6.18$ ,  $se = 1.21$ ,  $p < .001$ . This interaction was probed according to the procedures outlined by Hayes (2013) and is displayed in Fig. 1. As shown in Fig. 1, the combination of low PGI and low grit corresponded to relatively high maladjustment in the present sample,  $b (se) = -6.18 (1.21)$ ,  $p < .001$ . Grit was related to relatively fewer adjustment difficulties, independent of PGI,  $b (se) = -1.81 (1.41)$ ,  $p = .20$ .

Lastly, to further illuminate the relation of grit with domains of psychosocial functioning, correlations between grit and SDQ subscales were analyzed. Self-reported grit was significantly, negatively related to adolescent-reported Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, and Peer Relationship Problems from the SDQ ( $r = -.27$  to  $-0.41$ ). It was also positively correlated with adolescent-reported Prosocial Behaviors,  $r = .31$ ,  $p = .001$ , but was not correlated with any parent-reported SDQ subscales. Parent-reported grit was negatively correlated with parent-reported Emotional Symptoms, Conduct Problems,

and Hyperactivity/Inattention ( $r = -.27$  to  $-0.58$ ), as well as adolescent-reported Conduct Problems,  $r = -.21$ ,  $p = .04$ , and Hyperactivity/Inattention,  $r = .31$ ,  $p = .002$ . Parent-reported grit was positively related to parent-reported Prosocial Behavior,  $r = .28$ ,  $p = .005$ . Thus, within informants grit was moderately related to the domains of adjustment measured by the SDQ in expected ways.

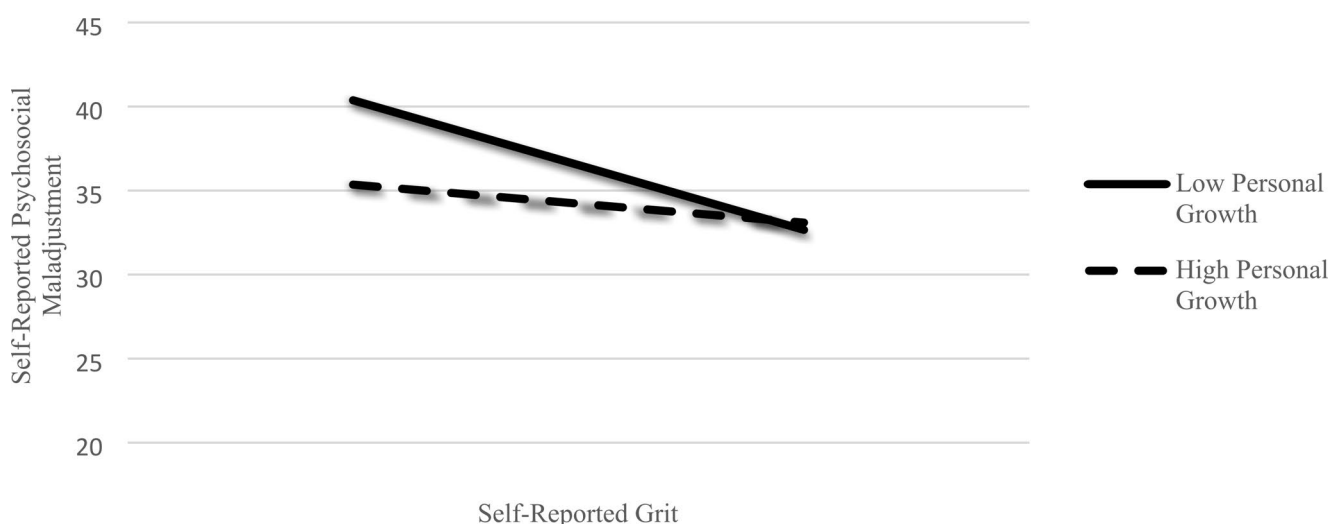
## Discussion

This study examined theoretically associated constructs of grit in a sample of at-risk adolescents to lend potential insight into relevant factors in grit's development and maintenance.

As expected, adolescent self-reported grit was significantly associated with self-reported personal growth initiative, self-efficacy, and boldness.

The finding concerning boldness is theoretically interesting, as boldness is also conceptualized as a component of psychopathy. It is possible that boldness, at least in a developmental context that involves some risk for maladjustment, may be adaptive relative to other characteristics linked to psychopathy and may promote perseverance and initiative (Nowakowski & Wróbel, 2021). Other studies suggest that boldness is linked to higher levels of narcissism and sensation-seeking (Sellbom & Phillips, 2013), as well as lower negative affect (Strickland et al., 2013), higher well-being, and lower self-harm (Blagov et al., 2016). Thus, further exploration of boldness as a developmental adaptation, perhaps particularly during adolescence, is needed.

In addition, and to our knowledge, this study was one of the first to investigate the association between parent- and



**Fig. 1** Interaction between grit and personal growth initiative in predicting variance in adolescent psychosocial adjustment (higher scores of adjustments equates to psychosocial maladjustment)

Note: Low PG:  $b (se) = -6.18 (1.21)$ ,  $p < .001$ ; High PG:  $b (se) = -1.81 (1.41)$ ,  $p = .20$

adolescent-reported grit. Consistent with much of the evidence-based assessment research on children and adolescents (see Frick et al., 2020), adolescent- and parent-reported grit demonstrated a moderate relation. In the context of that finding, the low correlations between parent-reported grit and adolescent self-reports of the other attributes is not surprising, even though the constructs are theoretically similar. Parents and adolescents may each have unique perspectives on how, or to what extent, the adolescent displays characteristics such as grit. This pattern may be particularly evident for older adolescents who spend relatively less time with parents than children or younger teens.

Further, consistent with theory and previous findings (see Guerrero et al., 2016; Marie et al., 2019; Sturman & Zapala-Piemme, 2017), grit appears to be a protective factor against maladjustment in this at-risk sample. Further consideration as to why grit could translate to a more adaptive developmental trajectory in such youth is essential. This sample involves older adolescents who have entered, or are about to enter, legal adulthood; thus, individuals who make that transition more successfully may be devoting more energy toward positive goals and perseverance through setbacks. Indeed, other related attributes (e.g., boldness, self-efficacy) could aid in attainment of positive educational, occupational, and/or interpersonal outcomes.

Finally, of note, grit did not moderate the relation between ACEs and adjustment in the present sample. It may be that maladjustment is connected to irreconciliation of past ACEs (Murphy et al., 2014), and instead, grit may assist adolescents in overcoming adverse events/setbacks as they occur. In the present sample, adolescents who endorsed both grit and PGI were less likely to report difficulties with emotional or behavioral functioning. This finding may have intervention implications. For example, fostering a belief in one's resilience and capacity for resilience may, in turn, increase perseverance toward valued goals. A concomitant emphasis on viewing challenges as opportunities for personal growth may also connect to positive outcomes, as well as continued grittiness. Such efforts would likely focus on an adolescent's self-schema and bear resemblance to promoting self-compassion (see Neff 2003; Neff & Vonk, 2009) for individuals who may otherwise overidentify with failure and not recognize setbacks as opportunities for growth. Further research and assessment are necessary to determine the viability of grit and PGI in intervention, particularly as they might relate to successful transitions from adolescence into adulthood.

## Limitations

This study had a number of limitations that must be considered. The at-risk sample affords an opportunity to consider grit as a resilience factor in a unique group but one that may not generalize to the larger population of adolescents. Because of the specificity of the sample and the program that participants were attending, the sample size was somewhat small. However, a power analysis indicated that a minimum sample size of 77 would be necessary to detect a moderate effect size with a power of 0.80 at  $p < .05$ . Furthermore, the sample of adolescents was predominantly male and White, potentially limiting generalizability to diverse groups of adolescents. Further, we did not ask parents to disclose demographic information, so the generalizability of parent reports to parent perspectives of adolescents in general is uncertain. An additional limitation of this study is the reliance mostly on adolescent self-report; thus, shared source variance may have inflated some of the reported relations. The use of parent-report enabled evaluation of some cross-informant relations, including the degree of convergence in reports of grit for this at-risk sample. Nevertheless, future research should utilize additional assessment tools, such as teacher- or peer-report and objective indicators of functioning (e.g., academic records, achievement in various life domains, employment status). Lastly, the cross-sectional design prevented consideration of some developmental and temporal relations among the constructs, especially concerning grit, ACEs, and psychosocial adjustment.

## Future directions

Longitudinal research will allow further investigation of developmental outcomes connected to adolescent grit. Future research may also consider how grit develops and the impact that a residential program or other interventions may have on fostering grit and other forms of positive adaptation. Overall, grit and character strengths are important to research in youth and similar populations because of the potential greater benefits of identifying protective factors for at-risk youth and subsequently to promote such factors in prevention and intervention efforts. That is, further understanding of the interplay between grit and other variables could inform best approaches for enhancing persistence toward goals and pursuit of areas of interest, particularly among adolescents who are otherwise at-risk for negative life outcomes.

**Data Availability** The datasets generated during and/or analyzed during the current study are available from the corresponding author on request.

## Declarations

**Conflict of interest** The authors have no conflicts of interest to declare.

**Ethics approval** This study has been approved by the [redacted for blind review] Institutional Review Board.

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