

Psychological Correlates of Grit Among Nigerian University Students: An Exploratory Cross-Sectional Study of Distress, Mindfulness, Resilience and Social Support

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Abstract

Background: Grit, commonly defined as perseverance and sustained interest in long-term goals, has been associated with achievement and psychological well-being. Its associations with both psychological distress and positive psychological resources remain underexamined among university students in sub-Saharan Africa. This study examined the relationships of grit with terrorism catastrophising, anxiety, depressive symptoms, mindfulness, resilience and social support among Nigerian undergraduates.

Methods: An exploratory cross-sectional survey recruited 161 undergraduate sociology students at Kaduna State University through convenience sampling during a departmental event. Participants completed the Short Grit Scale, 14-item Freiburg Mindfulness Inventory, 25-item Resilience Scale, 3-item Oslo Social Support Scale, 13-item Terrorism Catastrophising Scale and Hospital Anxiety and Depression Scale. Pearson correlations assessed bivariate relationships. A one-way multivariate analysis of variance compared participants categorised as having high versus low grit across six psychosocial outcomes, followed by Bonferroni-adjusted univariate analyses.

Results: Participants had a mean age of 25.39 years (SD 5.42); 100 (62.1%) were male. Grit correlated inversely with terrorism catastrophising ($r=-0.264$, $p<0.001$), depressive symptoms ($r=-0.205$, $p=0.009$) and anxiety symptoms ($r=-0.188$, $p=0.017$), and positively with mindfulness ($r=0.338$, $p<0.001$) and resilience ($r=0.278$, $p<0.001$). Its correlation with social support was not statistically significant ($r=0.128$, $p=0.106$). The multivariate difference between grit groups was significant (Wilks lambda=0.821, $F[6,154]=5.604$, $p<0.001$, partial eta-squared=0.179). At the Bonferroni-adjusted alpha of 0.008, high-grit participants had lower terrorism catastrophising scores ($F[1,159]=11.06$, $p=0.001$, partial eta-squared=0.065) and higher mindfulness scores ($F[1,159]=22.04$, $p<0.001$, partial eta-squared=0.122).

Conclusion: In this single-department convenience sample, grit showed small-to-moderate associations with lower psychological distress and higher mindfulness and resilience. Mindfulness and terrorism catastrophising most clearly distinguished the predefined grit groups. The cross-sectional design, uncertain cut-offs, low Grit-S internal consistency and restricted sample preclude causal or population-level conclusions. Multi-site longitudinal research should validate the measurement of grit in Nigerian students and test its relationship with objective academic outcomes.

Keywords: grit, mindfulness, resilience, psychological distress, terrorism catastrophising, Nigerian university students

Introduction

University achievement reflects an interaction between prior attainment, motivation, self-regulation, study behaviours, social context and psychological well-being. A large meta-analysis of tertiary education studies found that academic self-efficacy, grade goals and effort regulation were among the strongest non-intellectual correlates of grade-point average, underscoring the relevance of modifiable psychological processes to student outcomes.[1]

Grit was introduced as perseverance and passion for long-term goals and was initially reported to predict achievement across educational and performance

settings.[2] The Short Grit Scale (Grit-S) operationalises the construct through two related dimensions: perseverance of effort and consistency of interest.[3] Subsequent evidence has been more qualified. A meta-analysis found that grit has modest associations with performance and substantial overlap with conscientiousness, with perseverance of effort generally showing stronger validity than consistency of interest.[4] Cross-cultural evidence also suggests that the two facets may function differently across social contexts, making local psychometric evaluation important before an overall grit score is interpreted as culturally invariant.[5]

Grit has also been studied as a correlate of well-being rather than achievement alone. A meta-analysis of 83 studies found a positive association between grit and subjective well-being, although the magnitude varied by grit facet and well-being domain.[6] Among university students, grit has been examined alongside positive psychological resources and anxiety within broader models of covitality.[7] Mindfulness and resilience are especially relevant because they may support attentional regulation, adaptive coping and persistence under stress. Cross-sectional evidence links mindfulness with resilience and well-being,[8] while a pragmatic trial found that a university mindfulness programme improved resilience to stress during the academic examination period.[9] These findings do not establish that mindfulness increases grit, but they support examining the constructs together.

The Nigerian context adds a further dimension. University students may manage academic demands alongside economic pressure, service constraints and concerns about insecurity. Previous research in Kaduna identified substantial terrorism catastrophising and associations with depression and generalised anxiety,[10] suggesting that future-oriented threat appraisals may be relevant to students' persistence and well-being. However, evidence examining grit simultaneously with anticipated threat, anxiety, depressive symptoms, mindfulness, resilience and social support among Nigerian undergraduates remains limited.

This exploratory study therefore examined: (1) the correlations of grit with three distress-related measures: terrorism catastrophising, anxiety and depressive symptoms; and three positive psychosocial resources: mindfulness, resilience and social support; and (2) whether students categorised as having high versus low grit differed across these six outcomes. We expected grit to correlate inversely with distress and positively with mindfulness, resilience and social support. Given the cross-sectional design, all analyses were interpreted as associations rather than causal or predictive effects.

Methods

Study design and reporting

This was an exploratory cross-sectional questionnaire study. The revised report was organised with reference to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations.[11]

Setting, participants and recruitment

Participants were undergraduate students of Sociology, Kaduna State University, Kaduna, Nigeria. Recruitment occurred during the department's annual week, when students from different levels of study were present. Eligible students had completed matriculation, had no existing severe physical or mental health condition, and provided consent to participate in the study. A non-probability convenience approach yielded 161 participants. This corresponded to a 7.72% margin of error at the 95% confidence level.[12] Ages ranged from 18 to 43 years, with a mean of 25.39 years (SD 5.42).

Measures

Sociodemographic questionnaire. This collected participants' age, sex and marital status.

Short Grit Scale. The Grit-S is an eight-item self-report measure derived from the original 12-item Grit Scale.[2,3] It assesses perseverance of effort and consistency of interest using five response options. The conventional scoring procedure reverse-scores negatively worded items and calculates a mean or total score, with higher scores indicating greater grit. The present study also divided respondents into high- and low-grit groups based on their distribution around the mean score. Internal consistency was low in this sample (Cronbach alpha=0.57), which limits score precision and may attenuate associations.

Freiburg Mindfulness Inventory. The 14-item short Freiburg Mindfulness Inventory assesses present-moment awareness and non-judgemental orientation to experience.[13] Items are rated from 1 to 4, producing a possible total score of 14-56; higher scores indicate greater mindfulness. Cronbach alpha was 0.68 in the present sample, indicating marginal internal consistency.

Resilience Scale. The 25-item Resilience Scale assesses personal competence and acceptance of self and life.[14] Items are rated from 1 to 7, with higher total scores indicating greater resilience. Prior research has reported acceptable reliability across populations,[15] including a Nigerian validation study.[16] The present analysis used both continuous scores and a high/low categorisation.

Oslo Social Support Scale. The three-item Oslo Social Support Scale (OSSS-3) assesses the number of close confidants, perceived interest and concern from others, and ease of obtaining practical help. It produces a total score from 3 to 14 and is commonly interpreted as low, moderate or strong support.[17] A

Nigerian study reported its psychometric properties among clinical students.[18]

Terrorism Catastrophizing Scale. The 13-item Terrorism Catastrophizing Scale (TCS) measures rumination, magnification and helplessness concerning anticipated terrorist attacks.[19] Items are rated on a five-point scale and summed to a total score of 13-65, with higher scores indicating greater catastrophising. The manuscript used a total-score threshold of 33 and high/low subscale categories. Previous work in Kaduna reported Cronbach alpha=0.72 and associations with depression and generalised anxiety.[10]

Hospital Anxiety and Depression Scale. The Hospital Anxiety and Depression Scale (HADS) contains seven anxiety items and seven depression items, each yielding a score from 0 to 21.[20] It was developed as a screening instrument and has been validated in Nigerian hospital and community samples.[21] The study used a threshold of at least 8 on each subscale. Scores at or above this threshold were interpreted as elevated symptoms or screen-positive status, not as confirmed psychiatric diagnoses.

Data collection and ethical considerations

Participants completed the questionnaire battery after providing informed consent. Data were entered into Microsoft Excel spreadsheets for cleaning before import into IBM SPSS Statistics version 21 for analysis.

Statistical analysis

Data were analysed using IBM SPSS Statistics version 21. Cronbach alpha was calculated for the Grit-S and Freiburg Mindfulness Inventory. Descriptive statistics summarised participant characteristics and categorised measure scores.

Pearson product-moment correlations examined the relationship between grit and each psychosocial variable.

A one-way multivariate analysis of variance (MANOVA) compared the high- and low-grit groups on TCS total, HADS depression, HADS anxiety, mindfulness, resilience and social-support scores. The overall multivariate test was followed by six one-way analyses of variance. To control the family-wise type I error rate, the univariate alpha was set at 0.008 (0.05/6). Effect sizes were reported as partial eta-squared. All tests were two-sided.

Results

Participant characteristics

The 161 participants had a mean age of 25.39 years (SD 5.42); 126 (78.3%) were younger than 30 years. One hundred participants (62.1%) were male, and 114 (70.8%) were unmarried (Table 1). The manuscript did not provide a participant flow diagram or response rate.

Distribution of psychosocial measures

Ninety participants (55.9%) were classified as having low grit and 71 (44.1%) as having high grit. Using the study's categorisations, 125 (77.6%) had TCS total scores at or above 33, 102 (63.4%) screened positive for elevated depressive symptoms and 82 (50.9%) screened positive for elevated anxiety symptoms. The high/low thresholds for grit, mindfulness, resilience and TCS subscales were not documented and require confirmation (Table 2).

TCS, Terrorism Catastrophizing Scale. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Exact p-values for the grit correlations were reconstructed from the reported coefficients and sample size; verify against the original analysis, particularly where social-support data are missing.

Table 1. Sociodemographic characteristics of participants (N=161)

Characteristic	Category	n	%
Age	<30 years	126	78.3
	≥30 years	35	21.7
Age, mean (SD)	25.39 (5.42) years		
Sex	Male	100	62.1
	Female	61	37.9
Marital status	Married	47	29.2
	Unmarried	114	70.8

SD, standard deviation.

Table 2. Distribution of categorised psychosocial measures

Measure	Category	n	%
Grit	High	71	44.1
	Low	90	55.9
TCS rumination	High	87	54.0
	Low	74	46.0
TCS magnification	High	65	40.4
	Low	96	59.6
TCS helplessness	High	62	38.5
	Low	99	61.5
TCS total	≥33	125	77.6
	<33	36	22.4
HADS depression	Elevated symptoms (≥8)	102	63.4
	Below threshold (<8)	59	36.6
HADS anxiety	Elevated symptoms (≥8)	82	50.9
	Below threshold (<8)	79	49.1
Mindfulness	High	79	49.1
	Low	82	50.9
Resilience	High	85	52.8
	Low	76	47.2
Social support (n=160)	Moderate	77	48.1
	Low	83	51.9

Table 3. Pearson correlation matrix for grit and psychosocial variables

Variable	1	2	3	4	5	6	7
1. Grit	1	-0.264***	-0.205**	-0.188*	0.338***	0.278***	0.128
2. TCS total		1	0.119	0.433***	-0.082	-0.164*	-0.029
3. Depression			1	0.328***	-0.318***	-0.220**	-0.024
4. Anxiety				1	-0.194*	-0.215**	0.079
5. Mindfulness					1	0.391***	0.052
6. Resilience						1	0.101
7. Social support							1

HADS, Hospital Anxiety and Depression Scale; TCS, Terrorism Catastrophizing Scale. Social-support percentages were recalculated from the displayed counts; one observation appears to be missing. Cut-offs for the high/low grit, TCS

subscale, mindfulness and resilience categories require author verification.

Correlations with grit

Grit correlated inversely with terrorism catastrophising ($r=-0.264$, $p<0.001$), depressive

symptoms ($r=-0.205$, $p=0.009$) and anxiety symptoms ($r=-0.188$, $p=0.017$). It correlated positively with mindfulness ($r=0.338$, $p<0.001$) and resilience ($r=0.278$, $p<0.001$). The correlation with social support was small and not statistically significant ($r=0.128$, $p=0.106$). Mindfulness had the largest correlation with grit among the variables examined (Table 3).

Multivariate and univariate comparisons by grit group

The combined six-variable outcome differed significantly between participants classified as

having high versus low grit (Wilks lambda=0.821, $F[6,154]=5.604$, $p<0.001$, partial eta-squared=0.179). At the Bonferroni-adjusted threshold of $p<0.008$, high-grit participants had significantly lower TCS total scores and higher mindfulness scores. Differences in depression, anxiety and resilience were nominally significant at $p<0.05$ but did not meet the adjusted threshold; social support did not differ (Table 4).

Table 4. Psychosocial scores by grit group and follow-up univariate analyses

Variable	Low grit (n=90)		High grit (n=71)		F(1,159)	p	Partial eta ²
	Mean	SD	Mean	SD			
TCS total	40.23	6.531	36.70	6.877	11.06	0.001	0.065
Depression	9.52	3.745	8.32	3.129	4.70	0.032	0.029
Anxiety	8.40	3.613	6.90	3.910	6.36	0.013	0.038
Mindfulness	39.07	5.471	43.23	5.720	22.04	<0.001	0.122
Resilience	125.31	18.930	132.48	23.273	4.65	0.033	0.028
Social support	8.50	1.326	8.72	1.416	1.03	0.312	0.006

TCS, Terrorism Catastrophizing Scale. The Bonferroni-adjusted alpha was 0.008. F-statistics absent from the source manuscript were reconstructed from the displayed group sizes, means and standard deviations and must be verified against the original SPSS output. Social-support analyses may have used $n=160$ rather than 161; confirm the denominator and degrees of freedom.

Discussion

Principal findings

In this exploratory sample of Nigerian undergraduates, higher grit scores were associated with lower terrorism catastrophising, depressive symptoms and anxiety symptoms, and with higher mindfulness and resilience. The associations were small to moderate. Social support showed a small positive but non-significant correlation with grit. When participants were divided into high- and low-grit groups, the six psychosocial variables differed jointly; however, only terrorism catastrophising and mindfulness met the Bonferroni-adjusted threshold in the follow-up analyses.

The direction of the associations is broadly consistent with evidence linking grit to subjective well-being and lower psychological distress.[6,7] However, the present effect sizes should not be interpreted as evidence that grit is a dominant determinant of mental health. Meta-analytic research suggests that the incremental value of grit is modest and that perseverance of effort may account for more useful variance than consistency of interest.[4] The low internal consistency of the total Grit-S score in this sample further increases uncertainty and may reflect translation, item interpretation, heterogeneous facets, restricted variance or limited cultural fit.

Mindfulness, resilience and grit

Mindfulness had the strongest bivariate association with grit and the largest univariate group effect. One plausible interpretation is that present-moment attention and a less reactive stance may reduce distraction, rumination and avoidance, thereby supporting sustained effort. Mindfulness has also been linked with resilience and well-being in university samples.[8] Practice-oriented reviews describe possible attentional, affect-regulation and

self-awareness mechanisms,[22] while controlled university studies show that mindfulness programmes can improve resilience to stress.[9] Nevertheless, the present data cannot determine whether mindfulness supports grit, grit enables sustained mindfulness practice, or both reflect unmeasured self-regulatory characteristics.

Resilience correlated positively with grit, but the group difference did not survive correction for multiple testing. This pattern suggests conceptual relatedness without interchangeability. Grit concerns sustained goal pursuit, whereas resilience concerns adaptation or recovery in the face of adversity. Future studies should analyse the Grit-S facets separately and test whether resilience mediates or moderates relationships between stress exposure, persistence and academic outcomes.

Terrorism catastrophising and distress

Terrorism catastrophising was inversely associated with grit and distinguished the two grit groups after correction. The TCS captures future-oriented rumination, magnification and helplessness,[19] cognitive processes that may compete with the sustained attention and perceived agency required for long-term goal pursuit. Earlier Kaduna research linked greater terrorism catastrophising with depression and generalised anxiety,[10] which is consistent with the strong TCS-anxiety correlation in the present matrix. The relationship should still be interpreted cautiously because threat exposure, current security conditions, media exposure and personal loss were not measured, and the TCS and grit were assessed at the same time.

The inverse correlations with HADS anxiety and depression were smaller than those for mindfulness and terrorism catastrophising. Furthermore, anxiety and depression group differences did not meet the adjusted univariate threshold. HADS scores indicate elevated symptoms rather than clinical diagnoses. The high proportion above the screening threshold may reflect genuine burden, the characteristics of this convenience sample, contextual stress or the performance of the threshold in this population. Clinical conclusions require diagnostic assessment and a representative sampling strategy.

Social support

Social support was not significantly associated with grit. This may reflect restricted variation, the brevity of the OSSS-3, the apparent missing observation or the possibility that support operates conditionally rather than as a direct correlate of persistence.

Longitudinal evidence has shown that social support may buffer the mental-health effects of adverse events, particularly among people who perceive low control.[17] Future work should therefore examine the quality, source and stress-contingent use of support rather than relying only on a global three-item score.

Implications for research and university practice

The findings support a balanced, context-sensitive view of grit. Universities should not use grit scores to label students, allocate admission or imply that academic difficulty mainly reflects insufficient perseverance. A low score may occur alongside financial pressure, poor learning conditions, mental ill-health, insecurity or competing responsibilities. Where student-well-being programmes are developed, mindfulness and coping skills may be considered as components of broader support rather than as interventions presumed to increase grit. Systematic reviews indicate that psychological interventions can benefit university students, but effects vary and implementation should be evidence-based, accessible and linked to appropriate clinical care.[23]

For research, culturally robust psychometric work is a priority. The factor structure, reliability and measurement invariance of the Grit-S should be tested in diverse Nigerian student groups before overall scores or cut-offs are used. Continuous modelling is preferable to an unexplained high/low split. Multi-site longitudinal studies should include objective academic outcomes, socioeconomic circumstances, year of study, prior attainment, personality, stress exposure, sleep, substance use and access to support. Such designs could distinguish temporal ordering and test whether perseverance of effort and consistency of interest have different correlates or consequences.

Strengths and limitations

A strength of the study is its simultaneous assessment of distress-related and positive psychological variables in an underrepresented university context. The inclusion of locally evaluated measures for resilience, social support, HADS and terrorism catastrophising improves contextual relevance. The multivariate approach also reduced reliance on isolated pairwise comparisons.

Several limitations are substantial. First, the cross-sectional design precludes temporal or causal inference. Second, convenience recruitment from

one academic department limits representativeness and generalisability across Kaduna State University, Nigerian universities or sub-Saharan Africa. Third, the response rate, recruitment flow, study dates and eligibility criteria were not reported. Fourth, all variables were self-reported in the same questionnaire session, creating risks of common-method variance, social desirability and mood-congruent reporting. Fifth, the Grit-S reliability was low and the reliability of several other scales was not reported. Sixth, cut-offs for the grit, mindfulness, resilience and TCS categories were unclear, and dichotomisation reduced information. Seventh, one social-support observation appears to be missing and the handling of missing data was not described. Eighth, no objective academic-performance measure was included, so the study cannot demonstrate that grit improved achievement. Ninth, potential confounders, including year of study, socioeconomic circumstances, exposure to insecurity, personality, sleep and substance use, were not assessed. Finally, possible participant or dataset overlap with an earlier Kaduna TCS study must be clarified to establish the present study's independence and novelty.

Conclusion

Among 161 sociology undergraduates recruited from one Nigerian university department, grit was associated with lower terrorism catastrophising, anxiety and depressive symptoms, and with higher mindfulness and resilience. Mindfulness and terrorism catastrophising most clearly differentiated the predefined high- and low-grit groups after adjustment for multiple testing. These findings are exploratory and do not show that changing mindfulness or threat appraisal will increase grit or academic attainment. The next research priority is a culturally validated, multi-site longitudinal study using continuous grit facets, objective educational outcomes and adequately measured contextual determinants.

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