

Grit, Humor, and Suicidal Behavior:

Results from a Comparative Study of Adults in the United States and United Kingdom

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Abstract

Suicidal thoughts and behaviors (STBs) in both the United States (U.S.) and United Kingdom (U.K.) are on the rise. Identification of individual-level protective factors can better inform prevention and intervention efforts. However, the protective role of humor and grit are not yet fully understood. The current study (1) identified the potential protective associations of humor subscale (affiliative, self-enhancing, self-defeating, and aggressive) and grit on STBs among adults, and (2) explored the moderating role of country (U.S. or U.K.) on the relation between humor and grit with STBs. Participants (N = 832) completed self-report measures administered online: Humor Styles Questionnaire, Grit Scale, and Suicidal Behaviors Questionnaire-Revised. Moderation analyses were conducted using bootstrapping techniques. Aggressive humor was related to greater STBs, while grit was related to fewer STBs. Further, cross-cultural variation in humor styles and STBs were observed. Self-enhancing and self-defeating humor were significantly negatively related to STBs among participants from the U.K., but not the U.S. Therapeutically promoting self-enhancing and self-defeating humor as positive coping mechanisms may be beneficial for treating STBs among individuals in the U.K. Reducing aggressive humor may also have utility for suicide prevention.

Key Words: Grit; Humor; Suicide; Cross-Cultural

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1. Introduction

Suicidal thoughts and behaviors (STBs) remain a serious public health concern worldwide. According to the World Health Organization (WHO), the annual global age standardized suicide rate is 10.5 per 100,000 (World Health Organization [WHO], 2018); however, in the U.S. and U.K. the rates are higher than the global average and both countries have recently seen increases in these rates. Recent suicide statistics from the U.K. (2018 registrations) indicated an age-standardized rate of 11.2 deaths per 100,000 population and within the U.S., the age-adjusted suicide rate (2017 registration) was 14.0 per 100,000 individuals (Centers for Disease Control and Prevention [CDC], 2019).

Researchers are therefore focused on identifying risk and protective factors contributing to risk for suicide across cultures. STB research is typically aimed at understanding risk factors, while little research has focused on understanding protective factors (Franklin et al., 2017). Despite this imbalance, it is generally acknowledged that our ability to identify and understand protective factors is equally important to suicide prevention as is understanding risk factors (e.g., CDC, 2016; Larkin, Di Blasi, & Arensman, 2014). Per the Interpersonal Psychological Theory of Suicide (IPTs; Joiner, 2005) and Integrated Motivational-Volitional model (IMV; O'Connor & Kirtley, 2018), unmet interpersonal needs may contribute to the progression of suicidal behavior. Thus, bolstering interpersonal relationships, perhaps through humor, may reduce suicide risk. Further, per the IMV, coping (e.g., humor, grit) moderates the progression of suicidal SDV. The present study conducts a cross-national examination of two protective factors for STBs, namely humor styles (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003) and grit (Duckworth, Peterson,

Matthews, & Kelly, 2007), given their potential clinical utility in suicide prevention (e.g., Marie et al., 2019; Stockton, Tucker, Kleiman, & Wingate, 2016).

1.1 Humor: Styles and associations with well-being

The styles in which people use humor in their day to day interactions may play a role in reducing risk for suicidal ideation (Martin et al., 2003; Stockton et al., 2016). Martin and colleagues (2003) posit a multi-dimensional conceptualization of humor styles: affiliative humor, self-enhancing humor, aggressive humor, and self-defeating humor. Affiliative humor is defined by one's tendency to amuse other people and tell amusing stories (Martin et al., 2003), and it serves to strengthen relationships and increase positive emotions (Miczo et al., 2009). Self-enhancing humor refers to the ability to maintain a humorous and optimistic outlook on life, even when faced with challenges and adversity (Martin et al., 2003). Self-enhancing humor aids in coping and management of stress in a way that does not harm the self or others (Kuiper & McHale, 2009). Aggressive humor, on the other hand, is humor that is disparaging and expressed without concern for how it might affect other people (Martin et al., 2003). Finally, self-defeating humor refers to humor which is self-deprecating and serves to bolster interpersonal relationships, but at a cost to the self (Kuiper & McHale, 2009; Martin et al., 2003).

Although humor is used across cultures, there are differences in how it manifests across countries. Germane to the current study, British individuals tend to employ humor less in social situations compared to their American counterparts (Martin & Sullivan, 2013). Further, in two separate twin studies conducted in North America and the U.K., among North American twins, genetic factors largely contributed to affiliative and self-enhancing humor, but less to negative humor (i.e., aggressive and self-defeating humor); in contrast, among U.K. twins, genetics

contributed to all four humor styles (Vernon, Martin, Schermer, Cherkas, & Spector, 2008a; Vernon, Martin, Schermer, & Mackie, 2008b).

Overall, use of humor is positively related to psychological well-being (Martin, Kuiper, Olinger, & Dance, 1993; Stieger, Fromann & Burger, 2011); however, when breaking humor down into its subtypes, more complex relationships appear. Specifically, affiliative and self-enhancing humor are linked to lower levels of loneliness, depression, and anxiety symptoms (Cecen, 2007; Fitts, Sebby, & Zlokovich, 2009; Martin et al., 2003), while self-defeating humor is related to worse mental health outcomes (Martin et al., 1993; Schneider, Voracek, & Tran, 2018).

Importantly, extant research indicates that certain humor styles may be protective against suicidal ideation (SI). For example, affiliative humor is related to reduced SI through increased gratitude (Stockton et al., 2016) and mitigates the relationship between thwarted interpersonal needs and SI (Tucker et al., 2013). On the other hand, self-defeating humor exacerbates the relationship between thwarted interpersonal needs and STBs (Tucker et al., 2013). Further, self-defeating humor is positively related to rumination, brooding, and common SI risk factors (Tucker et al., 2014). In individuals exhibiting elevated borderline personality disorder (BPD) traits, affiliative and self-enhancing humor reduce the relationship between BPD personality traits and SI, whereas self-defeating humor increases this relationship (Meyer et al., 2017). These findings indicate that humor may either exacerbate or reduce SI. The protective role of positive humor may be due to affiliative and self-enhancing humor strengthening interpersonal relationships and aiding in coping in times of stress. Negative humor, particularly self-defeating humor, may exacerbate negative mood or cognitions about the self that increase vulnerability for SI (Tucker et al., 2014).

Given cross-national and cross-cultural differences in humor as well as the potential utility of humor in understanding SIs, research examining cross-national differences in the humor-STB relationship is warranted. The present research extends investigation to potential differences relative to not only SI, but lifetime STBs, across individuals from the U.S. and U.K.

1.2 Grit: Cross-cultural applications and STBs

Another protective factor against STBs is that of grit, or “perseverance and passion for long-term goals” in spite of adversity, failure, and stymied progress (Duckworth et al., 2007, p. 1087). The construct validity of grit is supported across world regions; however, cross-cultural differences exist including lower internal consistency of grit among collectivistic cultures (e.g., Latin America and East and South Asia) and lower concurrent validity of grit with subjective well-being among Eastern Europeans as compared to other world regions (Disabato, Goodman, & Kashdan, 2017). However, differences between Anglo nations and Northern Europe (e.g., U.S. vs. U.K.) have not been previously examined (Disabato et al., 2017).

Grit demonstrates a protective effect against a myriad of physical and mental health outcomes (e.g., depression, healthcare management skills) (Musumari, et al., 2018; Salles, Cohen, & Mueller, 2014; Sharkey et al., 2017). However, findings regarding the relations between grit and STBs are mixed. Grit attenuates the relationship between symptoms of post-traumatic stress disorder (PTSD) and SI and acts in synergy with gratitude, when moderated by meaning in life, in reducing SI (Kleiman, Adams, Kashdan, & Riskind, 2013; Marie et al., 2019). Interestingly, grit has also been found to exhibit a protective effect when interacting with risk factors for SI. Specifically, grit predicted SI in interaction with brooding in a sample of undergraduates (White et al., 2017). By contrast, at high levels of grit, the relationship between non-suicidal self-injury (NSSI) and suicide attempts is strengthened (Anestis & Selby, 2015),

indicating grit may serve as a risk factor for the NSSI-suicidal behavior link. Nuanced findings in terms of grit relative to STBs warrants further investigation, considering the potential influence of culture in light of cross-national differences in grit.

1.3 The present study

The present study examined the potential protective associations of humor (affiliative, self-enhancing, self-defeating, and aggressive) and grit on STBs among adults, and explored the moderating role of country (U.S. or U.K.) on the relation between humor subscale and grit with STBs. The following hypotheses were made:

H1. We would observe significant main effects for affiliative and self-enhancing humor, such that greater levels of affiliative and self-enhancing humor would be related to lesser total STBs and clinical suicide risk.

H2. We would observe significant main effects for aggressive and self-defeating humor, such that greater levels of self-defeating and aggressive humor would be related to greater total STBs and clinical suicide risk.

In light of the nuanced findings of the grit-STBs linkage, as well as the lack of examination of how both humor and grit operate differentially as protective factors across cultures, the following research questions were also explored:

RQ1. Does the relation between humor subscale and STBs differ among participants from the U.S. and U.K.?

RQ2. Does grit significantly positively or negatively associate with STBs among the current sample?

RQ3. Does the relation between grit and STBs differ among participants from the U.S. and U.K.?

2. Method

2.1 Participants

The sample comprised 832 adults, with 50.2% ($N = 418$) of participants from the U.K. and 49.8% ($N = 414$) of participants from the U.S. Across samples, participants primarily identified as White ($n = 653$; 78.5%), female ($n = 622$; 75.7%) and heterosexual ($n = 643$; 77.4%), with an average age of 24.94 years ($SD = 4.72$). A summary of demographics by country can be found in Table 1.

3. Materials

3.1 Demographics

Participants completed a demographic questionnaire assessing gender, sexual orientation, age, and race.

3.2 Humor

The Humor Styles Questionnaire (Martin et al., 2003) is a 32-item self-report questionnaire that assesses individual uses of humor. Each of the questions is scored on a Likert scale that ranges from 1 (“totally disagree”) to 7 (“totally agree”). Subscale scores are generated with 8 items per sub-scale for affiliative humor, self-enhancing humor, aggressive humor, and self-defeating humor. The internal consistency of the subscales ranges from acceptable to good (affiliative humor $\alpha = .80$; self-enhancing humor $\alpha = .81$; aggressive humor $\alpha = .77$; self-defeating $\alpha = .80$) (Martin et al., 2003). In the current study, subscale internal consistency among the total sample ranged from questionable to good (affiliative humor $\alpha = .83$; self-enhancing humor $\alpha = .78$; aggressive humor $\alpha = .63$; self-defeating $\alpha = .81$). Table 2 contains internal consistencies for HSQ subscales by country.

3.3 Grit

The Grit Scale (Duckworth et al., 2007) is a 12-item self-report questionnaire that assesses an individual's perseverance towards long-term goals. Each of the questions is scored on a Likert scale that ranges from 1 to 5. Responses are summed and an average score is generated, with a score of 1 denoting individuals who are "not at all gritty" and a score of 5 indicating individuals who are "extremely gritty." The Grit Scale has good internal consistency ($\alpha = .85$) (Duckworth et al., 2007). In the current study, the internal consistency of the Grit Scale was acceptable ($\alpha = .71$) among the total sample. Table 2 contains internal consistencies for grit by country; the internal consistency among the U.S. sample was not within the acceptable range ($\alpha = .56$).

3.4 STBs

The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) is a 4-item self-report questionnaire used to assess the presence of STBs and their severity, including lifetime suicidal behavior, suicidal behavior in the past year, communication of intent, and likelihood of future suicide attempt. Responses are summed for a total score which ranges from 3 to 18, with higher scores indicating higher STBs. Among general adult samples, a cutoff score of 7 is also used to indicate individuals at clinical risk (Osman et al., 2001). In the current study, both the total score and clinical cut-off score were used. The SBQ-R has good internal consistency (α range = .87 to .97) (Osman et al., 2001) and in the current study, the internal consistency of the SBQ-R was good ($\alpha = .83$) among the total sample. Table 2 contains internal consistencies for the SBQ-R by country.

4. Procedure

A cross-sectional survey was developed for online distribution across countries. Human subjects review board review and approval occurred at one U.K. and one U.S. institution. All

participants were consented via online information sheet. Further details regarding the study procedure has been described in detail elsewhere (see Cramer et al., 2019).

5. Data Analysis

Missing data was addressed via multiple imputation (Enders, 2017). Missingness ranged from 0% to 4.5% on items of interest. Imputation was conducted using a linear regression model approach with fully conditional specification. Pearson's product-moment correlations assessed the association between, and independence of, study variables, with a coefficient of $r \geq .80$ as a cut-off for multicollinearity (Field, 2005). H1 and H2 as well as RQ1 through RQ3 were examined via bootstrapping moderation analyses using "Model 1" of the PROCESS macro (Hayes & Little, 2018) in conjunction with SPSS 26.0. Current analyses utilized a bootstrapping rate of 10,000 resamples. Two models, one with total STBs as the outcome¹ and one with clinical risk as the outcome, were conducted for each of the four humor subscales and grit, yielding a total of ten models. The following parameters were consistent across models: (a) demographic covariates² which include age, sexual orientation (referent group = heterosexual), gender identity (referent group = cisgender), and race (referent group = White), (b) main effects of a humor subscale or grit, (c) interaction of humor subscale or grit by country, and (d) dependent variable of either total STBs (total score on SBQ-R) or clinical risk (above/below clinical cut-off score on SBQ-R).

6. Results³

¹ When models were conducted using the second item of the SBQ-R as a measurement of past year SI, findings remained largely consistent. Differences between total score and SI analyses included: 1) the interaction of self-enhancing humor by country and 2) main effect for country in the aggressive humor model were non-significant.

² Gender and race were included as covariates given established differences in risk for STBs (e.g., Curtin & Hedegaard, 2019); further, bivariate associations in the current study indicated significant differences in sexual orientation and age by STBs outcome (see Table 2, Table 1 in the online supplements).

³ When all predictors were run simultaneously, there was a main effect for self-enhancing humor, aggressive humor, and grit in the total STBs and clinical risk models. There was a significant interaction effect for self-

6.1 H1: Affiliative and self-enhancing humor and suicide

H1 was not supported as the main effects for affiliative and self-enhancing humor were not significant in either the total STBs or clinical risk model (all $ps > .05$; Tables 3 and 4, respectively). However, in the total STBs and affiliative humor model, a significant main effect was present for country, whereby individuals from the U.K. were at increased risk of total STBs ($p < .01$; Table 3). The main effect of country was not significant in either of the self-enhancing humor models or the clinical risk and affiliative humor model (all $ps > .05$).

6.2 H2: Aggressive and self-defeating humor and suicide

H2 was partially supported. In the aggressive humor and total STBs model, there was a significant main effect for aggressive humor, such that aggressive humor was significantly positively related to total STBs ($p < .001$; Table 5); further, there was a significant main effect for country, such that individuals from the U.K. reported higher total STBs compared to U.S. counterparts ($p < .05$). In the clinical risk model, only the main effect for aggressive humor was significant, such that aggressive humor was associated with significantly higher odds of being at elevated clinical risk ($p < .001$; Table 6). For self-defeating humor, in both the total STBs and clinical risk models, the main effects of country and self-defeating humor were not significant (all $ps > .05$).

6.3 RQ1: The moderating role of country

The interaction of affiliative humor and country was not significant across models. The interaction of self-enhancing humor and country was significant in both the total STBs ($p < .001$; Figure 1) and clinical risk ($p < .001$; Figure 2) models, such that self-enhancing humor was related to lesser total STBs and decreased odds of clinical risk among participants from the U.K.

enhancing humor by country in the total STBs and clinical risk models. See Table 2, Table 3 in the online supplements.

compared to those from the U.S. The interaction of aggressive humor and country was not significant across models (all $ps > .05$). The interaction of self-defeating humor and country was significant in only the total STBs model ($p < .05$; Figure 3), such that self-defeating humor was related to lesser total STBs among participants from the U.K. Thus, results related to RQ1 suggest that the relation between humor subscale and STBs differ among participants from the U.S. and U.K. for self-enhancing and self-defeating humor, whereby both humor subscales act in a protective manner for STBs among participants from the U.K.

6.4 RQ2 and RQ3: Grit and suicide

Regarding RQ2, there was a significant main effect for grit in both the total STBs ($p < .05$; Table 7) and clinical risk ($p < .01$) models, such that grit was associated with decreased total STBs and lower odds of clinical risk. Further, in the total STBs model there was a significant main effect for country ($p < .01$), such that being from the U.K. was associated with increased total STBs. Per RQ3, the interaction of grit and country was not significant in either model (all $ps > .05$).

7. Discussion

Results of the current study depict novel nuanced results regarding humor styles and suicide risk and resilience. Among individuals from both the U.K. and U.S., aggressive humor was significantly positively associated with clinical risk and total STBs, indicating that a tendency towards sarcasm, teasing, and humor as manipulation may exacerbate suicidal behavior. The relationship between aggressive personality traits and STBs is well-established (Gvion & Apter, 2011; Turecki, 2005), and the use of aggressive humor may be a behavioral manifestation of trait aggression contributing to risk for STBs. Further, the current study documents cross-national differences in the protective nature of self-enhancing humor for STBs.

It may be that individuals from the U.K., who are less likely to utilize humor in social situations (i.e., affiliative humor) (Martin & Sullivan, 2013), instead rely on self-enhancing humor as a coping mechanism. Previous research found a deleterious effect of self-defeating humor on mental health outcomes and STBs (e.g., Schneider et al., 2018; Tucker et al., 2013). By contrast, the current study highlights self-defeating humor as protective for total STBs among participants from the U.K., but not U.S. It may be that self-defeating humor exhibited a protective effect because it is more culturally appreciated and has greater heritability among individuals from the U.K. as compared to U.S. (Vernon et al., 2008a; Vernon et al., 2008b).

Affiliative humor was not significantly associated with either total STBs or clinical risk, nor were cross-national differences found. While affiliative humor exhibits protective effects for other mental health outcomes (e.g., depression) (Martin et al., 1993), it only buffers risk for STBs in synergy with other risk and protective factors (Meyer et al., 2017; Stockton et al., 2016; Tucker et al., 2013); thus, it may be that affiliative humor does not have a direct independent relationship with STBs.

Among U.K. and U.S. participants, grit was related to both decreased total STBs and clinical risk. Across previous research, grit either precipitated or buffered risk for STBs; however, these studies examined the interaction of grit and other risk factors (e.g., NSSI, PTSD) with STBs (Anestis & Selby, 2015; Kleiman et al., 2013; Marie et al., 2019) suggesting that while grit may exacerbate risk in the presence of other risk factors, it may exhibit an independent protective effect with STBs when considered alone. Taken together, emerging evidence suggests grit may be a context-dependent suicide-related factor requiring careful consideration for its potentially harmful or beneficial role. Further, the grit-STB relationship did not differ by country perhaps due to the similarity between the U.K. and U.S. as Western, individualistic countries

(Disabato et al., 2017). The absence of significant findings related to grit may have been due to measurement variation, as the internal consistency of the grit measure among participants from the U.S. was not within acceptable range and was markedly lower than the internal consistency among the U.K. sample. This may reflect cultural variation in the grit construct as indicated by responses to or interpretation of grit measure items.

7.1 Implications

These findings have important clinical and training implications. Decreasing use of aggressive humor among individuals from both the U.S. and U.K. may reduce STBs. In addition, promoting use of self-enhancing and self-defeating humor as a coping mechanism among participants from the U.K. may reduce STBs. Incorporating humor into a strengths-based framework as part of evidence-based interventions such as Cognitive Behavioral Therapy (Mewton & Andrews, 2016) and Dialectical Behavior Therapy (Linehan et al., 2015) may offer clinical utility. When training clinicians (Cramer, Johnson, McLaughlin, Rausch, & Conroy, 2013), careful consideration should be given to the inclusion of grit as a protective factor for STBs given that in some instances grit may exacerbate risk, rather than contribute to resilience.

7.2 Limitations and future directions

Findings should be interpreted in the context of study limitations. The sample was a convenience sample recruited online. Future research should use alternative recruitment strategies to be inclusive of the greater population, including older individuals and those without Internet access. The current study utilized a demographically homogenous sample (e.g., primarily White, female, and heterosexual). Future research should extend to vulnerable populations given racial, gender, and sexual orientation-related differences in STBs (Curtin & Hedegaard, 2019; King et al., 2008). Further, the cross-national samples from the U.K. and U.S.

are both Western, individualistic nations, warranting the exploration of differences across more diverse nations and cultures. Cross-sectional study design using self-report questionnaires leads to susceptibility to common method variance bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and precludes examination of temporal sequencing; longitudinal research is needed in order to assess the cross-national protective role of grit and humor. Finally, given the relation between humor and grit and STBs, future research examining the interrelationship of traits as predictive of STBs may better help identify and intervene with individuals at risk.

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Table 1

Descriptive statistics by sample (United Kingdom versus United States)

	U.K sample	U.S. sample
Race		
White (U.S.)	-	262 (63.3%)
Anglo/Caucasian/British/Scottish (U.K.)	391 (93.5%)	-
Asian	8 (1.9%)	12 (2.9%)
Black	-	51 (12.3%)
Latino/a	1 (0.2%)	36 (8.7%)
Native American/Pacific Islander	-	8 (1.9%)
Multiracial	1 (0.2%)	19 (4.6%)
Indian	6 (1.4%)	-
Pakistani	4 (1.0%)	-
Other (e.g., other unspecified)	10 (2.4%)	6 (1.4%)
Missing/declined to state	1 (0.2%)	20 (4.8%)
Gender		
Male	82 (19.6%)	98 (23.7%)
Female	325 (77.8%)	297 (71.7%)
Transgender, Male-to-Female	1 (0.2%)	1 (0.2%)
Transgender, Female-to-Male	5 (1.2%)	3 (0.7%)
Transgender, do not identify as male or female	4 (1.0%)	3 (0.7%)
Not sure	1 (0.2%)	1 (0.2%)
Decline to state/missing	-	14 (3.4%)
Sexual Orientation		
Heterosexual/straight	303 (72.5%)	340 (82.1%)
Lesbian	22 (5.3%)	7 (1.7%)
Gay	23 (5.5%)	5 (1.2%)
Bisexual	49 (11.7%)	44 (10.6%)
Not sure	10 (2.4%)	5 (1.2%)
Decline to state/missing	2 (0.5%)	7 (1.6%)
Other	9 (2.2%)	6 (1.4%)
Clinical risk score		
No risk	210 (50.2%)	238 (57.5%)
Elevated risk	208 (49.8%)	176 (42.5%)
Age*		
	23.40 (4.16)	26.50 (4.75)
Affiliative humor*		
	43.76 (8.72)	36.46 (9.00)
Self-enhancing humor*		
	32.00 (9.08)	34.95 (8.33)
Aggressive humor*		
	32.72 (10.17)	31.71 (9.02)
Self-defeating humor*		
	26.30 (7.91)	29.22 (6.96)
Grit*		
	3.18 (0.64)	3.10 (.50)
Suicide thoughts and behaviors total score*		
	7.51 (4.20)	6.53 (3.75)

Notes: U.K. = United Kingdom sample ($N = 418$); U.S. = United States sample ($N = 414$);

*Continuous variables = Mean (standard deviation)

Table 2

Internal consistencies and bivariate associations of study variables

	U.S. sample α	U.K. sample α	2	3	4	5	6	7
1. Affiliative humor	.76	.87	0.27**	<-.001	-0.02	0.17**	-0.09*	-0.10**
2. Self-enhancing humor	.74	.80	-	0.18**	0.05	0.16**	-0.27**	0.14***
3. Self-defeating humor	.77	.85	-	-	0.25**	-0.15**	-0.06	-0.03
4. Aggressive humor	.53	.71	-	-	-	-0.27**	0.36***	-0.18***
5. Grit	.56	.80	-	-	-	-	-0.09*	0.13***
6. Total STBs	.82	.84	-	-	-	-	-	-0.20***
7. Age	-	-	-	-	-	-	-	-

Notes: U.K. = United Kingdom sample; U.S. = United States sample; α = Internal consistency; Affiliative humor = Humor Styles Questionnaire subscale; Self-enhancing humor = Humor Styles Questionnaire subscale; Self-defeating humor = Humor Styles Questionnaire subscale; Aggressive Humor = Humor Styles Questionnaire subscale; Grit = Grit Scale; Total STBs = Suicidal Behaviors Questionnaire-Revised Total Score;

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

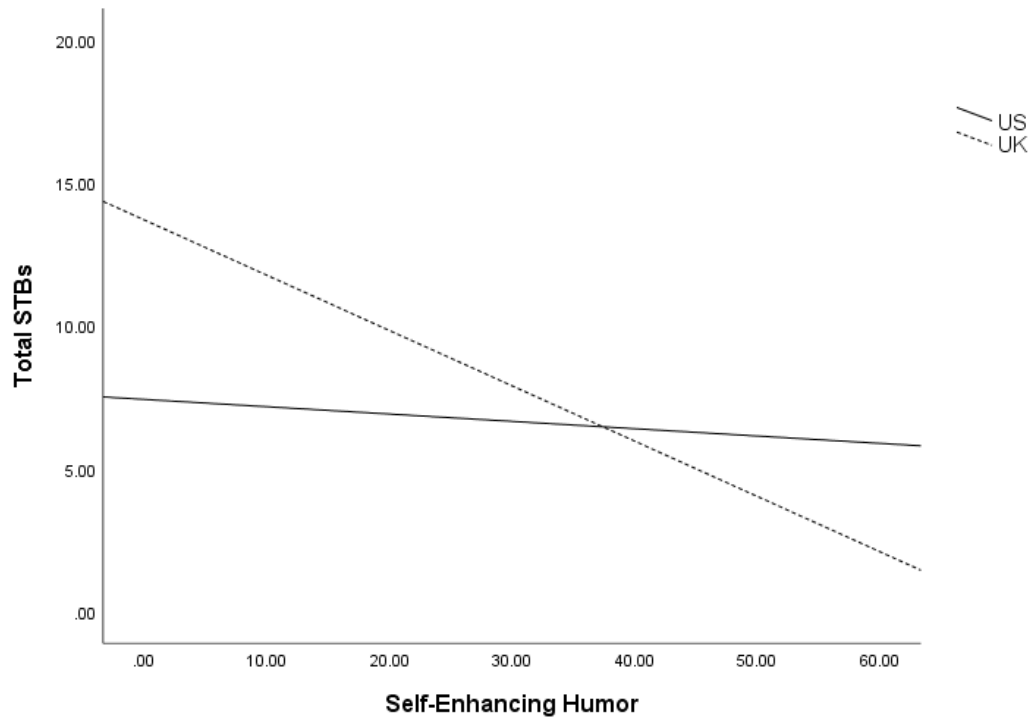


Figure 1. Country as moderator of self-enhancing humor and total STBs

Note: Self-enhancing humor = Humor Styles Questionnaire subscale; Total STBs = Suicidal Behaviors Questionnaire-Revised Total Score

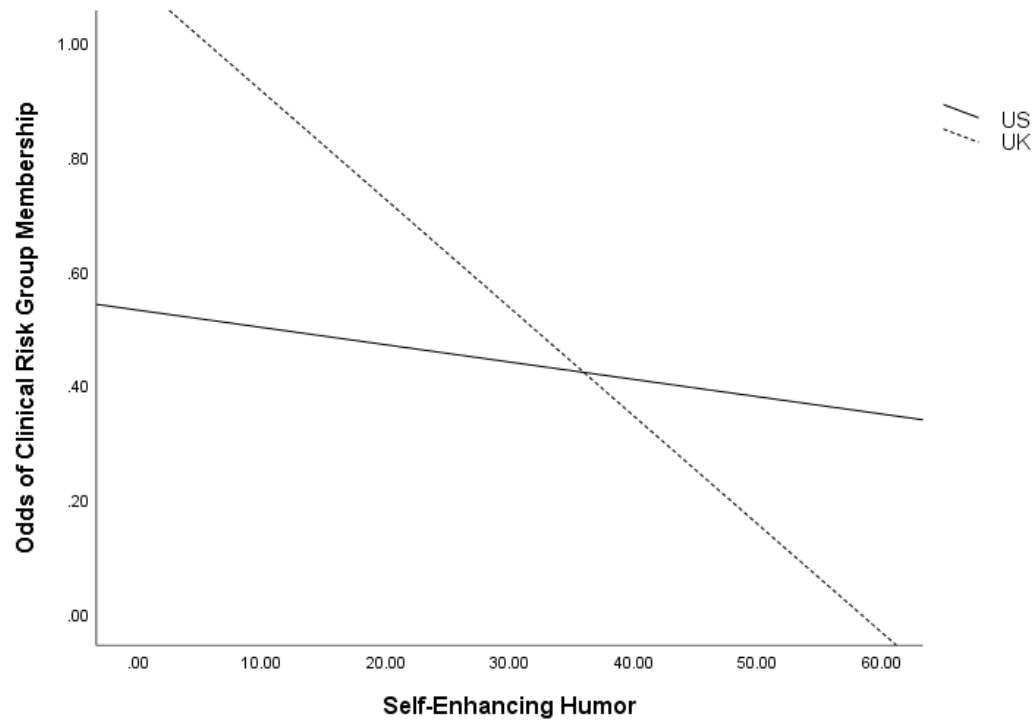


Figure 2. Country as moderator of self-enhancing humor and clinical risk

Note: Self-enhancing humor = Humor Styles Questionnaire subscale; Clinical Risk = Suicidal Behaviors Questionnaire-Revised Clinical Cut-off Score (total score ≥ 7)

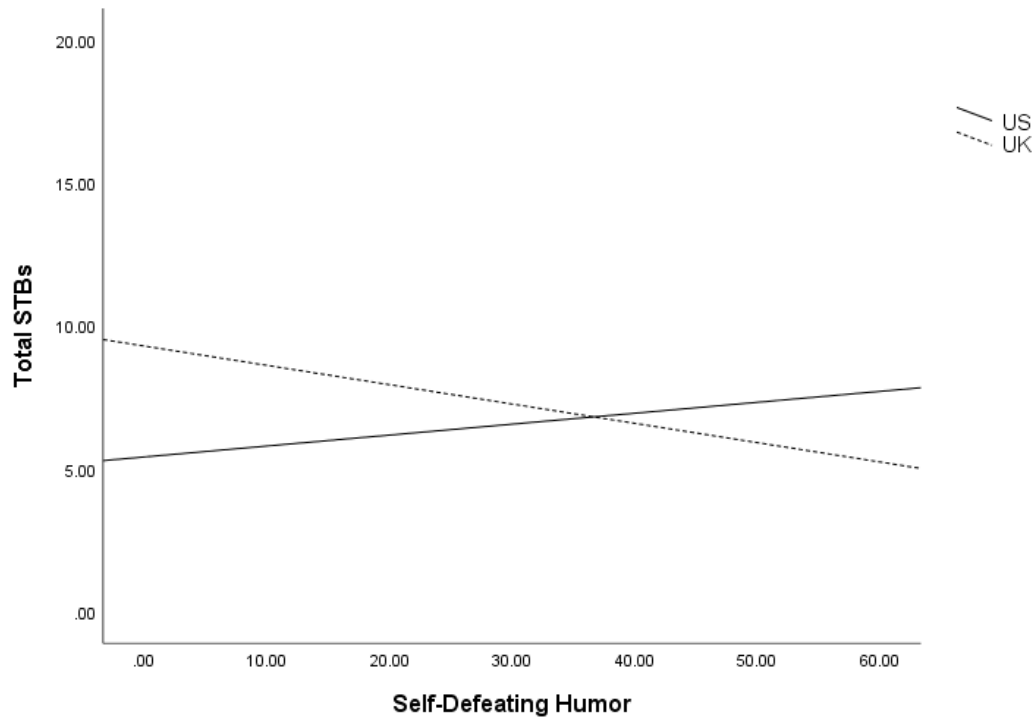


Figure 3. Country as moderator of self-defeating humor and total STBs

Note: Self-defeating humor = Humor Styles Questionnaire subscale; Total STBs = Suicidal Behaviors Questionnaire-Revised Total Score