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Risk-Taking Behavior in Relation to Aggressivity and Sensation Seeking among Adolescents Experiencing Loss of a Parental Figure

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ABSTRACT

This study examine the relationship of aggressivity and sensation seeking with risk-taking behavior among adolescents experiencing loss of a parental figure. A correlational design was used with 229 adolescents aged 17-21 years selected by purposive sampling and recruited through TikTok, who completed an online questionnaire (Google Forms) containing adapted risk- taking, aggression, and sensation seeking scales. Data were analyzed with multiple linear regression in SPSS, supplemented by bootsrap estimation (BCa 95% confidence intervals). Together, aggressivity and sensation seeking were significantly related to risk-taking behavior ($R = 0.496$ $R^2 = 0.246$ $F = 36.936$ $p < 0.001$). Partially, aggressivity showed a positive and significant relationship ($B = 0.295$ $\beta = 0.476$, $t = 8.191$, $p < 0.001$, BCa 95% CI [0.213, 0.386]), whereas sensation seeking did not ($B = - 0.092$, $\beta = - 0.099$ $t = -1.702$, $p = 0.090$, bootstrap $p = 0.065$, BCa 95% CI [-0.187, 0.008]). Risk – taking scores were spread across categories, most often high and low, whereas aggressivity and sensation seeking were mostly moderate. Aggressivity was more strongly associated with risk-taking than sensation seeking; the cross – sectional design does not permit casual inference.

1. INTRODUCTION

The family is an important context for socialization and character development. Parents and other parental figures provide guidance, emotional support, and behavioral models that can shape adolescents' development (Sugiarti et al. 2022). However, some adolescents experience loss of a parental figure through death, divorce or separation, prolonged absence, or reduced parental functioning. Such experiences may be associated with emotional and behavioral difficulties during development (Coffino 2009; Guzzo and Gobbi 2023). In this study, loss of a parental figure refers to the absence of a father, mother, or other primary caregiver from the adolescent's life, whether through death, divorce or separation, prolonged absence, or a marked reduction in parental functioning. These conditions are not equivalent. Parental death is a bereavement experience, whereas divorce, separation, and prolonged absence involve a parent who is still alive but no longer available in the same way, and may be accompanied by family conflict or changes in living arrangements. Reduced parental functioning concerns the quality of caregiving rather than the physical presence of the parent. Loss experiences also differ in their duration, in the availability of substitute caregivers, and in how traumatic they are (Coffino 2009), so their psychological consequences may differ as well (Guzzo and Gobbi 2023). Adolescence is also characterized by increasing autonomy, exploration, and sensitivity to reward and risk. Risk-taking behavior involves decisions or actions with uncertain outcomes that may produce desirable consequences but also potential harm (Reyna and Farley 2006; Trimpop 1994) Research has linked adolescent risk-taking to individual characteristics such as sensation seeking, impulsivity, aggression, and risk perception

(Arnett 1996; Figner and Elke U. Weber 2011; Reniers et al. 2016). Risk-taking behavior may be particularly relevant in adolescents experiencing loss of a parental figure. Previous research has found associations between family functioning or attachment quality and adolescent risk-taking (Keyzers et al. 2019), while parental bereavement has been associated with health-risk behaviors in youth (Hamdan et al. 2012). The experience of parental loss is heterogeneous, however, and not every adolescent responds in the same way. Aggressivity refers to tendencies involving aggressive responses such as physical aggression, verbal aggression, anger, and hostility (Gallagher and Ashford 2016; Perry 1992). Sensation seeking refers to a tendency to seek novel, varied, and intense experiences and stimulation (Arnett 1994; Zuckerman and Aluja 2015). Both characteristics have theoretical relevance to risk-taking, although their contributions may differ depending on context and the other variables included in a model.

Theoretically, aggressivity and sensation seeking may be linked to risk-taking through different routes. Sensation seeking is a motivational tendency to pursue novel and intense experiences, so individuals high on this trait may accept risk as a cost of obtaining stimulation (Arnett 1994; Zuckerman and Aluja 2015). Aggressivity, in contrast, reflects hostile and angry responding together with physical and verbal aggression, and it has been associated with risky decision-making and with reckless, externalizing behavior (Arnett 1996; Kuin et al. 2015). Because the two characteristics may overlap, their separate contributions are best examined in the same model, which allows the unique association of each with risk-taking to be estimated while the other is held constant. Risk-taking behavior in adolescents is a psychological phenomenon linked to the development of emotional regulation, impulse control, and a tendency to seek novel experiences. Based on the Dual Systems Model, (Steinberg 2008) explains that an increased sensitivity to rewards—not yet balanced by mature cognitive control, can heighten an adolescent's propensity to engage in risky behaviors. In this context, sensation-seeking acts as a drive to obtain new and intense experiences, while aggression may be associated with impulsive responses and risky conduct, particularly when an individual faces emotional distress (Romer 2010). For adolescents who have experienced the loss of a parental figure, a reduction in emotional support, supervision, and the stability of caregiving relationships can exacerbate such psychological vulnerabilities; consequently, aggression and sensation-seeking emerge as two critical characteristics to examine in relation to risk-taking behavior (Hamdan et al. 2012). Previous Indonesian research on adolescent risk-taking has examined factors such as peer influence, attachment, emotional characteristics, and other contextual variables (Purwoko and Sukamto 2013; Utami, Krisnatuti, and Yulianti 2023). Nevertheless, to the authors' knowledge, these studies did not focus on adolescents who have lost a parental figure. Research on parental loss, in turn, has concentrated on bereavement, depression, and health-risk behaviors (Coffino 2009; Guzzo and Gobbi 2023; Hamdan et al. 2012), and empirical evidence on how individual characteristics such as aggressivity and sensation seeking relate to risk-taking in this group remains limited. Therefore, this study examined the relationship of aggressivity and sensation seeking with risk-taking behavior among adolescents experiencing loss of a parental figure, both simultaneously and partially. By estimating the unique association of each characteristic while the other is held constant, the study aims to show which of the two is more closely linked to risk-taking among adolescents who have experienced the loss of a parental figure.

2. METHODS

This study used a quantitative approach with a correlational design. The participants were 229 adolescents aged 17-21 years who reported experiencing loss of a parental figure. Purposive sampling was used according to the study criteria. The questionnaire was administered online through Google Forms and distributed through TikTok beginning February 3, 2026. The study

initially obtained 230 responses; one response was not included in the final analysis, resulting in 229 analyzed participants. Loss of a parental figure was defined in this study as the adolescent's self-reported experience of losing the role of a parent in his or her life, whether through death, divorce or separation, prolonged absence, or reduced parental functioning. The inclusion criteria were (a) age 17-21 years and (b) a self-reported loss of a parental figure. The exclusion criterion was an incomplete questionnaire, that is, any unanswered item. Eligibility was determined by self-report: the researcher promoted the study through a TikTok post, contacted prospective participants who met the criteria through direct message, and shared the questionnaire link with them. The questionnaire recorded respondents' name, age, and sex; the type of loss, the parent figure lost, and the time since the loss were not recorded. Of the 229 participants, 202 (88.2%) were female and 27 (11.8%) were male; 3 were aged 17 years, 13 were 18, 12 were 19, 39 were 20, and 162 (70.7%) were 21. Three adapted instruments were used. The Risk-Taking Behavior scale was adapted from the Adolescent Risk Questionnaire developed by (Gullone, Moore, and Moss 2000), covering thrill-seeking, antisocial, rebellious, and reckless behaviors. The original 40-item form was tested and 25 items were retained, with item validity coefficients ranging from 0.210 to 0.697 and Cronbach's alpha of 0.884 The Aggressivity scale was adapted from the Aggression Questionnaire (Gallagher and Ashford 2016), covering physical aggression, verbal aggression, anger, and hostility. Twenty-seven items were retained, with validity coefficients ranging from 0.331 to 0.648 and Cronbach's alpha of 0.917. The Sensation Seeking scale was based on (Zuckerman and Aluja 2015), covering thrill and adventure seeking. experience seeking, disinhibition, and boredom susceptibility. Thirty-eight items were retained, with validity coefficients ranging from 0.391 to 0.703 and Cronbach's alpha of 0.961. The three scales were adapted from previously published instruments, with the items translated by the researcher for use with Indonesian respondents; some items were written by the researcher with reference to the aspects of those original scales. The initial scales contained 40 (Risk-Taking Behavior), 29 (Aggressivity), and 40 (Sensation Seeking) items. Content validity was evaluated by three psychologists through expert judgment (Aiken's V), followed by item validity analysis in successive stages with a validity coefficient cut-off of 0.20. Responses were scored as follows. The Risk-Taking Behavior scale used four response options (1-4) and the Aggressivity scale used five response options (1-5), with reverse scoring for unfavorable items, whereas the Sensation Seeking scale used a forced-choice format with two alternatives scored 1 or 0 according to the scoring key.

A total score was computed for each scale by summing the item scores, giving possible ranges of 25-100 (Risk-Taking Behavior), 27-135 (Aggressivity), and 0-38 (Sensation Seeking); higher scores indicate higher levels of the construct. Because the three scales use different response formats, their raw scores are not on the same metric and were not compared with one another. Each variable was classified into five categories (very low, low, moderate, high, very high) using the sample mean (M) and standard deviation (SD): very high, M + 1.5SD or above; high, M + 0.5SD to below M + 1.5SD moderate, M - 0.5SD to below M + 0.5SD low, M - 1.5 SD to below M - 0.5SD and very low, M1.5 SD or below. The number and percentage of respondents in each category are reported for each variable. In the regression analysis, the unstandardized coefficients (B) are expressed in the units of each scale, whereas the standardized coefficients (B) allow the relative contribution of the predictors to be compared. Content evaluation was conducted through expert judgment by three psychology experts before empirical testing. Data analysis used multiple linear regression in SPSS. Normality and linearity assumptions were examined before hypothesis testing. The Kolmogorov Smirnov test with Lilliefors correction indicated that risk-taking scores were not normally distributed ($p < 0.001$), whereas aggressivity scores were ($p = 0.200$); the test of linearity showed no significant deviation from linearity for aggressivity ($F = 1.086$, $p = 0.334$ or sensation seeking ($F = 0.817$, $p = 0.743$). The simultaneous hypothesis was evaluated using the F statistic, while partial relationships were evaluated using t statistics. Because of the departure from normality in the risk-taking scores,

bootstrap estimation (1,000 resamples) with 95% bias-corrected and accelerated (BCa) confidence intervals was also used, and the significance level was set $\alpha = 0.05$.

3. RESULTS AND DISCUSSION

RESULTS

The descriptive analysis showed that risk-taking scores were spread across the categories, with the largest groups in the high (34.9%) and low (30.1%) categories, whereas aggressivity and sensation seeking were most often in the moderate category (36.7% and 34.5%, respectively). The means and standard deviations are presented in Table 1, and the distribution of respondents across categories is presented in Table 2.

Table 1. Descriptive statistics of the study variables

Variable	N	Mean	SD
Risk – taking behavior	229	56.8210	11.16261
Aggressivity	229	95.9520	18.02952
Sensation seeking	229	18.4061	12.00351

Table 2. Distribution of respondents across categories, n (%)

Variable	Very low	Low	Moderate	High	Very High
Risk – taking behavior	14 (6.1%)	69 (30.1%)	58 (25.3%)	80 (34.9%)	8 (3.5%)
Aggressivity	18 (7.9%)	46 (20.1%)	84 (36.7%)	73 (31.9%)	8 (3.5%)
Sensation seeking	25 (10.9%)	50 (21.8%)	79 (34.5%)	53 (23.1%)	22 (9.6%)

3.1 Simultaneous Hypothesis Testing

Multiple linear regression indicated a significant simultaneous relationship between aggressivity, sensation seeking, and risk – taking behavior. The model yielded $R = 0.496$, $R^2 = 0.246$, $F = 36.936$, and $p < 0.001$. Thus, the two prdictors jointly accounted for 24.6% of the variance in risk – taking behavior. The remaining 75.4% represents variance not explained by the variables includes in this model and should not be interpreted as being causedby any particular set of other factors.

Table 3. Simultaneous multiple regression results

Predictors in the model	*R*	R^2	*F*	df	*p*
Aggressivity + Sensation Seeking	0.496	0.246	36.936	2,226	<0.001

3.2 Partial Hypothesis Testing

Aggressivity showed a positive and statistically significant partial relationship with risk-taking behavior (B = 0.295 . β = 0.476 , t = 8.191 p < 0.001; bootstrap p < 0.001) The bootstrap analysis produced a 95% BCa confidence interval of [0.213, 0.386], which did not include zero. Therefore, the first partial hypothesis was supported. Sensation seeking did not show a statistically significant partial relationship with risk-taking behavior (B = - 0.092 β = -0.099, t = - 1.702 p = 0.090; bootstrap p = 0.065) The 95% BCa confidence interval was [-0.187, 0.008), which included zero. Therefore, the second partial hypothesis was not supported.

Table 4. Partial multiple reggression results

Predictor	*B*	*β*	*t*	*p*	Bootstrap p *p*	Bca 95% CI	Descision
Aggressivity	0.295	0.476	8.191	<0.001	<0.001	[0.213, 0.386]	Supported
Sensation seeking	-0.092	-0.099	-1.702	0.090	0.065	[-0.187, 0.008]	Not supported

DISCUSSION

The simultaneous result indicates that aggressivity and sensation seeking, when considered together, were significantly related to risk-taking behavior in this sample. The model explained 24.6% of the variance in risk-taking behavior. This finding is consistent with perspectives that adolescent risk-taking is multidimensional and may reflect interactions among individual characteristics and developmental contexts (Figner and Elke U Weber 2011; Jessor, Turbin, and Costa 2003). Aggressivity showed the stronger unique relationship in the regression model. When sensation seeking was held constant, higher aggressivity scores remained clearly associated with high risk – taking scores (β = 0.476), whereas the coefficient for sensation seeking was small, negative, and not statistically significant (β = -0.099). This pattern is consistent with literature linking aggression and risky decision-making (Kuin et al. 2015) and with the view that aggressive tendencies are associated with externalizing and reckless behavior (Arnett 1996). One reason aggressivity may stand out in this sample lies in how risk-taking was measured. The risk-taking scale covered thrill-seeking, antisocial, rebellious, and reckless behaviors (Gullone et al. 2000) and the antisocial and rebellious components overlap conceptually with hostile and aggressive responding. Sensation seeking, by contrast, reflects a motivation for novelty and stimulation that does not necessarily lead to rule-breaking. The shared content of the two scales may therefore have strengthened the association. Because both predictors were in the same model, the coefficient for aggressivity reflects the part of its association with risk-taking that is not shared with sensation seeking. In contrast, sensation seeking did not show a significant partial relationship, with risk-taking behavior after aggressivity was taken into account (p = 0.090; bootsrap p = 0.065), and its Bca confidence interval included zero. This does not mean that sensation seeking is theoretically unrelated to risk-taking, sice earlier studies have linked it to adolescent risk behavior and risky decision – making (Arnett 1996; Lauriola et al. 2014; Zhang, Zhang, and Shang 2016). Several considerations are relevant. First, the result cannot be attributed to overlap between the predictors: aggressivity and sensation seeking were only weakly correlated (r = -0.108; variance inflation factor = 1.01). Second, the direction of the relationship was opposite to theoretical expectation. Sensation seeking had a weak negative zero-order correlation with risk-taking (r = -0.150), and its partial coefficient was also negative, although small and non-significant. This should not be read as evidence of a protective role. Because the sensation seeking scale uses a dichotomous forced choice format and the risk-taking scale a four-option format with different content, the unexpected direction may partly reflect measurement characteristics, and replication with other measures is needed. Third, the respondents were adolescents aged 17-21 recruited online through TikTok by purposive sampling, and the findings may not hold for other groups of adolescents

The findings also need to be read in light of the respondents' circumstances. All participants had experienced the loss of a parental figure, but this experience is heterogeneous: it may involve bereavement, separation, divorce, prolonged absence, or reduced parental functioning, and the parent figure lost, the adolescent's age at the time, and the substitute caregiving available may differ (Coffino 2009; Guzzo and Gobbi 2023). Because the study did not compare types of loss and had no comparison group of adolescents without parental loss, the results cannot show that this pattern is specific to parental loss. What they do show is that, among adolescents who have lost a parental figure, higher aggressivity is the characteristic more clearly associated with higher risk-taking. Parental loss has been associated with emotional and behavioral difficulties (Coffino 2009; Guzzo and Gobbi 2023) and with health-risk behaviors in bereaved youth (Hamdan et al. 2012). Within that context, aggressive and hostile responding may be one visible expression of such difficulties that accompanies risk-taking. This remains an interpretation to be tested, because emotional difficulties, social support, and family conditions were not measured in this study. Several limitations should be considered. First, the cross-sectional design does not allow causal conclusions. Second, purposive

sampling and self – reported eligibility limit the generalizability of the findings. Third, loss of a parental figure is heterogeneous and may involve different experiences, including bereavement, separation, divorce, prolonged absence, or reduced parental functioning, and the study did not record the type of loss, the parent figure lost, or the time since the loss. Fourth, the use of self-report measures may introduce response bias. In addition, the study had no comparison group of adolescents who had not lost parental figure, so the findings cannot be attributed specifically to parental loss. Finally, the regression model explained 24.6% of the variance, indicating that other individual, social, and contextual variables were not represented in the model

4. CONCLUSION

Among adolescents who had experienced the loss of a parental figure, aggressivity and sensation seeking together were significantly related to risk-taking behavior, but the two characteristics did not contribute equally. Aggressivity was the characteristic more clearly and uniquely associated with risk-taking, whereas sensation seeking added no significant unique contribution once aggressivity was considered. The findings extend research on adolescent risk-taking to a group that, to the authors' knowledge, has received limited empirical attention in Indonesia, and they suggest that aggressive tendencies deserve attention when risk-taking is examined in adolescents who have lost a parental figure. Because the study used a cross-sectional correlational design, the findings describe associations and do not establish that aggressivity leads to risk-taking. Future research should distinguish between types of parental loss (death, divorce, separation, prolonged absence, and reduced parental functioning), include a comparison group, and take into account social support, family conditions, and other psychological characteristics of adolescents.

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