

## **Moderating Impact of Social Adjustment on the Relationship between Sensation Seeking and Behaviour Problems Among Adolescents**

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This research aims to investigate the relationship of sensation seeking and behaviour problems moderated by social adjustment among adolescents. Sample comprised of 280 adolescents within age range 12 to 18 years ( $M = 16.25$ ,  $SD = 1.54$ ) from both public and private sector educational institutions. The sample was divided into two categories i.e., high sensation seekers ( $n = 131$ ) and low sensation seekers ( $n = 139$ ). The sensation seeking was assessed using Sensation Seeking Scale (Zuckerman, 1994), behaviour problems using Child Problem Checklist (Tariq & Hanif, 2007), and social adjustment by using Social Adjustment Scale (Mushtaq, 2005). The results revealed positive relationship between sensation seeking and behaviour problems, while both these variables were found to be negatively related with social adjustment. Significant positive correlation was revealed between high sensation seeking and externalizing behaviour problems, while significant negative correlation was found with internalizing behaviour problems. Moderation of sensation seeking on externalizing behaviour problems and social adjustment was revealed to be significant within the total adolescent sample. In case of internalizing behaviour problems, the moderation by social adjustment was nonsignificant for total sample, but significant in low/high sensation seekers groups. This study can be of help for educationists, practitioners, social workers, parents, and adolescent's health.

*Keywords.* Adolescence, sensation seeking, behaviour problems, social adjustment

The time of adolescence denotes a very eventful period during which the person makes the transition from childhood to adulthood (Beyers, Goossens, Vansant, & Moors, 2003; Mulye, Park, & Nelson,

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2009). According to United Nations estimates the population of Pakistan less than 15 years was 35.4% (World Population Prospects, 2011). The desire for novelty and the courage for experimentation are much greater in adolescence than in later life (Chambers, Taylor, & Potenza, 2003; Larsen & David, 2008). Sensation seeking is defined by Zuckerman (1994) as “a trait that involves the seeking of varied, novel, complex, intense sensations and experiences, along with the willingness to take physical, social, legal, and financial risks for the sake of such experience” (p. 27). According to Zuckerman’s model of sensation seeking (1994), high sensation seekers are such individuals who have a strong approach and weak avoidance as a consequence of some new situation having chances of either reward or punishment (Lang, Shin, & Lee, 2005).

Four dimensions account for the complete conceptual clarity of sensation seeking trait including: thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility (as cited in Mannaa, Faraci, & Como, 2013; Zuckerman, Eysenck, & Eysenck, 1978). Thrill and adventure seeking is the desire to engage in sports or activities involving speed and danger (as cited in Mannaa et al., 2013). The second component includes the desire for social and sexual disinhibition (as cited in Mannaa et al., 2013). Experience seeking is the desire for experience through the mind and senses, travel, and a non-conforming lifestyle. Boredom susceptibility is the aversion to repetition, routine, and dull people (Mannaa et al., 2013).

Behaviour problems can result as a consequence of high indulgence in behaviours that are arousing, stimulating, novel or sensation seeking in early years of life (Albert & Steinberg, 2011; Eisenberg, Fabes, Guthrie, & Resiser, 2002; Greene, Kremar, Walters, Rubin, & Jerold, 2000; Joseph et al., 2009; Oshri, Tubman, Morgan-Lopez, Saavedra, & Csizmadia, 2013; Zuckerman, 2007). The behaviour problems can be divided into two broad categories including the internalizing behaviour problems that are focussed towards one’s own self. The person is thus expected to hurt or harm himself. The symptoms of internalizing behaviour are depression (Ollendick, Short, & Sander, 2008), anxiety and substance abuse (Perle et al., 2013), withdrawal (Perle et al., 2013), lower self esteem (Ollendick et al., 2008), increased dependency upon others (Perle et al., 2013), and self-induced inferiority complexes (McCulloch, Wiggins, Joshi, & Sachdev, 2000). Externalizing behaviours are the actions opposite to those in case of internalizing behaviours; thus lashing outward at others (Achenbach, 1991) by aggression, violence, defiant and criminal behaviours are the outcomes or symptoms of these behaviours (Jianghong, 2004). The majority frequently reported

behaviours customary or prevailing among the adolescent population consist of externalizing behaviour problems (Currie, Samdal, Boyce, & Smith, 2001). The World Health Organization (WHO) calculated that approximately 70% of untimely demises amid adults are due to behaviours such as smoking, illegal drug usage, and reckless driving kicked off at some point in adolescence (Ali, 2009).

Simultaneously, the years of adolescents are believed to be influential due to the influence of the peers and an increased need to obtain acceptance within the social environment (Beyers et al., 2003). Risk taking thus becomes one aspect of attaining such acceptance by peers through sexual activities, dating, risky driving, and other similar actions (Johnson et al., 2008; Rolison & Scherman, 2003). It is thus evidenced that adolescents tend to take more risks and indulge in actions deemed to be associated with high sensation seekers in order to obtain social adjustment (Johnson et al., 2008).

However, social adjustment is defined as the interplay between the individual and his or her social environment (Weissman & Paykel, 1974). According to Weissman and Paykel (1974) social adjustment refers to an individual's ability to adapt to, and derive satisfaction from the social roles. Problems within the social adjustment can thus be manifested in various forms, such as inability to perform effectively as a worker or a student in school, increased conflict in social and personal relations, and decreased contact with friends (as cited in Mushtaq, 2005). Tendency towards risky activities and inadequate behaviours is related with maladjustment (Wood, Cowan, & Baker, 2002). This maladjustment can arise within the social and leisure activities (Fawcett, 2007; Mahoney, Larson, Eccles, & Lord, 2005), work or school adjustment (Mudhovozi, 2012), peer adjustment (Crick & Nelson, 2002), family adjustment (Elmaci, 2006; Hugh, 2004), and extended family adjustment (Weissman & Paykel, 1974).

The relation of behaviour problems has also been revealed with maladjustment and the link is again established with the early tendency towards seeking of arousal (Eisenberg et al., 2002; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Simons, Stewart, Conger, Gordon, & Elder, 2002; Wood et al., 2002). Indulgence in such activities can lead to problematic behaviours that are deemed unacceptable within the society, thus secluding the individual (Hersen & Gross, 2008). The maladjustment caused as a consequence of childhood externalizing behaviour problems includes substance abuse (King, Iacono, & McGue, 2004), smoking (Helstrom, Bryan, Hutchison, Riggs, & Blechman, 2004), and lower graduation rates from high school (McLeod & Kaiser, 2004). Childhood internalizing

behaviour problems are linked to beginning of illegal drug abuse in early adolescence (King et al., 2004) along with eminent risk of drop out from the schools (McLeod & Kaiser, 2004). The conceptual model of this research is, thus, derived by the detailed review of the literature, in the light of which it is observed that sensation seeking is a trait that is positively related with externalizing behaviour problems while it is negatively related with internalizing behaviour problems (Hersen & Gross, 2008). The concept behind the two subdivisions is that the expression of distress suffered by an individual can be of two types: either directed towards self or others (Achenbach, 1991). The processes behind the appearance or on-set of the behaviour problems are different in the case of externalizing and internalizing behaviour problems. These processes involved are psychological in nature (Krueger, Caspi, Moffit, & Silva, 1998).

There are chances that additional factors might influence the development of behaviour problems in adolescents. The third variable influencing the expression of human traits or tendencies can be a product of heritability of genes usually referred to as the human genotype (Gjone & Stevenson, 1997; O'Connor, Neiderhiser, Reiss, Hetherington, & Plomin, 1998). There are also chances that instead of biological makeup of an individual, environment may play a significant role such as persistently unpleasant state of affairs in one's life, dysfunctional or disruptive family, and parental practices in early childhood (Caron & Rutter, 1991). It is also established through previous researches that sensation seeking and behaviour problems are affected by the appropriate expression of an individual's within social roles known as social adjustment (Morris et al., 2007; Weissman & Paykel, 1974).

The assumed model on the basis of relationship between sensation seeking and behaviour problems (externalizing/internalizing) expressed by Hensen and Gross (2008) is thus modified for this research. This relationship is expected to be moderated by social adjustment. Resultantly, this research aims to explore the relationship between sensation seeking (low/high), behaviour problems (externalizing/internalizing behaviour problems), and social adjustment among adolescents. It also aims to explore the moderation of the effect of sensation seeking (low/high) on behaviour problems by social adjustment among adolescents. The significance of this model is particularly enhanced because hardly any previous research was found inquiring the relationship of all three of these variables at a time, particularly comprising of adolescent sample residing within Islamabad and Rawalpindi. This research can help establish a relationship within our cultural context, thus adding to the existing

body of literature. This research might prove to be beneficial for the residents of this region along with experts and researchers, stakeholders, NGO's, educational institutions, and parents of adolescents among others.

### **Hypotheses**

1. High sensation seeking is positively related with externalizing behaviour problems among adolescents.
2. High sensation seeking is negatively related with internalizing behaviour problems and social adjustment among adolescents.
3. Social adjustment weakens the effect of sensation seeking on behaviour problems among adolescents.

## **Method**

### **Sample**

The sample for this research comprised of 280 adolescents within age range of 12 to 18 years ( $M = 16.25$ ,  $SD = 1.54$ ). Both boys (48.5%) and girls (51.4%) became the part of this research. The sample was employed by approaching the students within both public/private schools and colleges of Islamabad and Rawalpindi. As most of the questionnaires were filled under faculty supervision so none of the students within the required age range declined to take part in the research. Sample was divided into two categories i.e., high sensation seekers ( $n = 131$ ) and low sensation seekers ( $n = 139$ ). Sample distribution on the basis of high and low sensation seeking groups was almost equal comprising of 49.6% and 46.7% respectively, which was achieved through the use of a cut-off of 102, found out by the median and percentiles for the data. The cut-off was used after consultation with the author of the Sensation Seeking Scale (Aluja et al., 2010), who confirmed that no previous cut-off exists for this scale.

### **Instruments**

A demographic sheet was used to obtain information about the participants along with following measures:

**Sensation Seeking Scale.** The sensation seeking was measured using the Zuckerman Sensation Seeking Scale Form-V (SSS), with items retrieved from the Zuckerman-Kuhlman-Aluja Personality Questionnaire (Aluja, Kuhlman, & Zuckerman, 2010), comprising of four sub-scales, namely: Thrill and Adventure Seeking (TAS), Experience Seeking (ES), Disinhibition (DIS), Boredom Susceptibility/Impulsivity (BS/Imp). The scale was modified after a tryout phase that was carried out to determine the cultural appropriateness and the ease of comprehension of the instrument. The scale is a 4 point Likert type rating scale, comprising of 40 items, measuring the degree of agreeability with each item and thus sensation seeking tendency. The response options for each item range from 1 (*strongly disagree*) to 4 (*strongly disagree*) having forced choice format. Internal reliability for the total scale was found to be .86 (Zuckerman, et al., 1978). Chronbach's alpha computed for this research turned out to be .90 for the SSS scale. The sub-scales TAS, ES, DIS, and BS/Imp had internal reliability of .82, .78, .80, and .80 respectively. The score range for this scale is 40 to 160 and the cut-off was found through median and percentiles for the data collected. Items from 24 to 40 are reversed scored. The raw score for each subscale is the sum of the 10 weighted items for that subscale. A total SSS score is the sum of the 4 subscales.

**Child Problems Checklist.** Child Problems Checklist (CPCL) was used in this research for measuring behaviour problems among adolescents. This instrument is developed by Tariq and Hanif (2007) in Urdu, for identifying behaviours that are considered problematic by parents and teachers within the context of Pakistani society. It is designed for age group 6-18 years with a total of 80 items and three subscales. Out of the total of 3 sub-scales, namely externalizing behaviour problems, internalizing behaviour problems, and somatic domain, only two were used because of relevance to this research. The item number was thus reduced to 68. Cut-off scores for externalizing behaviour problems is 103 and for internalizing behaviour problems is 96. Alpha reliability of .97 was found for the entire scale of CPCL (Tariq & Hanif, 2007). The reliability for this research was .90 for the CPCL as well as its sub-scales. The checklist has 5 point rating scale and none of the items is negatively scored. High scores indicate more behaviour problems among children and low scores reflect less behaviour problems. The CPCL is particularly important due to its diverse usage, because it can be used as a parent report, teacher report, and a self report measure along with the indigenous development within Pakistani sample.

**Social Adjustment Scale.** Social adjustment was measured using the Urdu version of Social Adjustment Scale (SAS) initially developed by Weismann and Paykel (1947). Three subscales of the Social Adjustment Scale used were Social and Leisure sub-scale, Relatives sub-scale, and Work sub-scale (school related work). School related domain is translated by Shaheen (2006) and remaining domains have been translated by Mushtaq (2005). The original scale comprised of a total of 54 items but only 23 items were used in this research because rest of the items particular to domains such as marital role and parental role were not applicable to the adolescent sample. The scale is Likert type with most of the items having 5 options, while 9 items have 6 options, and only 1 item having 4 options. All the items are reverse scored, and the possible score range is 23-121. The test-retest reliability is .74 for the whole scale and Cronbach's alpha is .85 (Mushtaq, 2005). The Chronbach's alpha of Social Adjustment Scale for this research was found to be .80. High score on each domain shows well adjusted adolescents. Low score indicates poor adjustment in each domain.

### **Procedure**

Data collection was conducted through group administration of scales upon the adolescents from Islamabad and Rawalpindi, after approval from the heads of their institutions. The students were approached using the convenient sampling technique. Informed consent was taken from each student and confidentiality was ensured. They were given the instructions properly. The participants were then provided a copy of the demographic sheet, the Sensation Seeking Scale (SSS), Child Problems Checklist (CPCL), and the Social Adjustment Scale (SAS). Appropriate statistical tests were applied for the analysis of the data collected from the sample.

## **Results**

### **Relationship between Sensation Seeking, Behaviour Problems, and Social Adjustment**

Pearson correlation was computed to evaluate the relationship between sensation seeking, social adjustment, and behaviour problems along with the domains for each. The correlation was also commuted for the high and low sensation seeker adolescent groups. Results revealed through this analysis are as following in Table 1.

Table 1

*Correlation between Sensation Seeking (Thrill and Adventure Seeking, Experience Seeking, Disinhibition, Boredom Susceptibility), Behaviour Problems (Externalizing Behaviour Problems and Internalizing Behaviour Problems), and Social Adjustment (Social and Leisure, Relatives, and Work) Among Low Sensation Seekers (n = 139) and High Sensation Seekers (n = 131)*

S #	Scales	1	2	3	4	5	6	7	8	9	10	11	12
1	Sensation Seeking	-	<b>.89**</b>	<b>.88**</b>	<b>.90**</b>	<b>.60**</b>	<b>.10</b>	<b>.10</b>	<b>-.23**</b>	<b>.02</b>	<b>.04</b>	<b>.05</b>	<b>-.05</b>
2	Thrill and Adv Seeking	.67**	-	<b>.75**</b>	<b>.77**</b>	<b>.33**</b>	<b>-.09</b>	<b>.05</b>	<b>-.18*</b>	<b>.01</b>	<b>.04</b>	<b>.05</b>	<b>-.07</b>
3	Experience Seeking	.78**	.48**	-	<b>.75**</b>	<b>.39**</b>	<b>-.09</b>	<b>.06</b>	<b>-.19*</b>	<b>.00</b>	<b>.00</b>	<b>.03</b>	<b>-.03</b>
4	Disinhibition	.79**	.37**	.54**	-	<b>.44**</b>	<b>-.05</b>	<b>.13</b>	<b>-.18*</b>	<b>-.00</b>	<b>.01</b>	<b>.03</b>	<b>-.08</b>
5	Boredom Susceptibility	.80**	.29**	.46**	.54**	-	<b>-.11</b>	<b>.11</b>	<b>-.26**</b>	<b>.09</b>	<b>.11</b>	<b>.06</b>	<b>.02</b>
6	Behavior Problems	.53**	.39**	.41**	.29**	.49**	-	<b>.79**</b>	<b>.86**</b>	<b>-.35**</b>	<b>-.31**</b>	<b>-.26**</b>	<b>-.29**</b>
7	Externalizing Beh Prob	-.35**	-.35**	-.30**	-.36**	-.26**	.15	-	<b>.38**</b>	<b>-.44**</b>	<b>-.38**</b>	<b>-.32**</b>	<b>-.36**</b>
8	Internalizing Beh Prob	.27**	.27**	.19*	.08	.28**	.87**	.60**	-	<b>-.18*</b>	<b>-.16</b>	<b>-.13</b>	<b>-.14</b>
9	Social Adjustment	-.50**	-.28**	-.38**	-.31**	-.50**	-.53**	-.10	-.50**	-	<b>.86**</b>	<b>.87**</b>	<b>.70**</b>
10	Social and Leisure	-.48**	-.30**	-.37**	-.29**	-.47**	-.49**	-.13	-.47**	.65**	-	<b>.59**</b>	<b>.41**</b>
11	Relatives	-.28**	-.15	-.23**	-.22**	-.23**	-.31**	-.01	-.28**	.76**	.22**	-	<b>.53**</b>
12	Work	-.20*	-.09	-.12	-.07	-.28**	-.23**	-.09	-.24**	.59**	.00	.33**	-

*Note.* Adv = Adventure; Beh = Behavior; Prob = Problems.

Bold values in upper diagonal are for low sensation seekers and lower diagonal is for high sensation seekers.

\* $p < .05$ , \*\* $p < .01$ .



The results of correlation analysis revealed that significant positive correlation exists between sensation seeking, its domains, and behaviour problems within the low sensation group as well as the high sensation seeking group. Significant positive correlation between the high sensation seeking and the externalizing behaviour problems was also revealed. Internalizing behaviour problems domain on the other hand revealed significant negative correlation with sensation seeking for the low sensation seeking group, high sensation seeking group, and the total adolescent sample. Significant negative correlation was revealed between sensation seeking and social adjustment for high sensation seekers. The correlation between behaviour problems (externalizing/internalizing) and social adjustment, however, was significantly negative within high sensation seekers group. The results are in agreement with the direction proposed by literature and the conceptual model of this research (Albert & Steinberg, 2011; Eisenberg, et al., 2002; Greene, et al., 2000; Hersen & Gross, 2008; Joseph et al., 2009; Morris et al., 2007; Oshri et al., 2013; Zuckerman, 2007).

### **Moderating Effect of Social Adjustment**

Regression analysis was performed in order to explore the impact of social adjustment as a moderator on the relationship between sensation seeking and behaviour problems (externalizing/internalizing). This analysis was performed separately for the low/high sensation seekers groups as well as the total adolescent sample. The moderation is revealed as the impact of a third variable on the relationship between two variables and this is shown at different levels of the moderator.

#### **Sensation seeking and externalizing behaviour problems.**

The impact of social adjustment as a moderator on the relationship between sensation seeking and externalizing behaviour problems was assessed using the regression analysis for the total adolescent sample, along with the low and high sensation seeking groups. Within the low sensation seekers the moderation by social adjustment was revealed to be non-significant. Similar is the case for high sensation seeker group. The results were significant only in the case of the total adolescent sample. These results have been reported as following, in tabular form, after analysis. Table 1 shows the results of regression analysis for moderation. The  $\beta$  value for the interaction term (sensation seeking x social adjustment) is significant. The variation explained by the interaction term is 34.6%. This indicates that the moderator has a strong influence on the relationship between the other two variables.

Table 2

*Moderation of the effect of Sensation Seeking on Externalizing Behaviour Problems by Social Adjustment within Total Adolescents (N = 279)*

Predictors	Adjusted						
	Model	R <sup>2</sup>	R <sup>2</sup>	B	$\beta$	t	p
1 Constant				69.76		15.64	.00
Gender		.00	.00	-1.51	-.03	.54	.58
2 Constant				72.24		18.54	.00
Gender				-3.16	-.06	1.29	.19
SS				.23	.26	4.97	.00
SA		.31	.30	-.91	-.43	8.19	.00
3 Constant				68.08		17.39	.00
Gender				-.99	-.02	.40	.68
SS				.18	.21	3.96	.00
SA				-1.06	-.50	9.32	.00
SS * SA		.35	.34	-.01	-.22	4.16	.00

Note. SS = Sensation Seeking, SA = Social Adjustment.

Results in Table 2 show negative  $\beta$  value for the interaction effect, indicating that the relationship reveals prediction in negative direction. The results of the Table thus revealed are consistent with the modified conceptual model of this research using sensation seeking as a predictor, externalizing behaviour problems as outcome, and social adjustment as moderator.

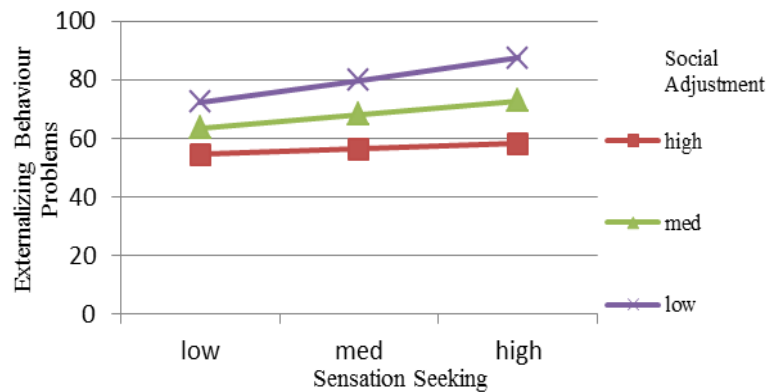


Figure 1. Moderation of the effect of Sensation Seeking on Externalizing Behaviour Problems by Social Adjustment within total Adolescent Sample.

Figure 1 reveals the mod-graph for the moderation by social adjustment on the effect of sensation seeking where as a result of high social adjustment the relationship between sensation seeking and

externalizing behaviour problems is close to neutral. The relationship between the sensation seeking and externalizing behaviour problems is thus weakened as a consequence of the interaction term. This direction of results is in accordance with the modified conceptual model presented for the research. When significance of slopes was computed and it showed:  $t = 1.09$  ( $p < .05$ ) for high level of social adjustment,  $t = 4.02$  ( $p < .00$ ) for medium level of social adjustment, and  $t = 5.95$  ( $p < .00$ ) for low level of social adjustment revealing that the moderation is strong for all the levels.

**Sensation seeking and internalizing behaviour problems.**

The moderation of the effect of sensation seeking on internalizing behaviour problems by social adjustment was also assessed. Results for the total sample were nonsignificant. Only significant results are reported.

Table 3

*Moderation of the effect of Sensation Seeking on Internalizing Behaviour Problems by Social Adjustment (N=277)*

Models		$R^2$	$\Delta R^2$	$B$	$\beta$	$t$	$p$
Low Sensation Seekers							
1	Constant			52.19		9.65	.00
	Gender	.30	.09	12.47	.30	3.69	.00
2	Constant			52.20		8.66	.00
	Gender			9.88	.23	2.64	.00
	SS			-.12	-.07	.82	.40
	SA	.36	.13	-.21	-.20	2.46	.01
3	Constant			54.79		9.52	.00
	Gender			9.58	.23	2.70	.00
	SA			-1.23	-.73	3.93	.00
	SS			-.16	-.15	1.93	.06
	SS*SA	.47	.22	-.03	-.72	3.97	.00
High Sensation Seekers							
1	Constant			50.68		9.44	.00
	Gender	.27	.07	10.81	.27	3.21	.00
2	Constant			74.90		10.18	.00
	Gender			2.58	.06	.71	.47
	SS			-.77	-.36	4.02	.00
	SA	.48	.23	-.66	-.50	4.80	.00
3	Constant			72.66		10.62	.00
	Gender			1.79	.04	.53	.59
	SA			-1.8	-.89	6.30	.00
	SS			-.35	-.26	2.41	.01
	SS * SA	.58	.34	.04	.76	4.63	.00

Note. SS = Sensation Seeking, SA = Social Adjustment

Table 3 shows the results of moderation analysis. The  $\beta$  value for the interaction term (sensation seeking x social adjustment) is significant. The variation due to the interaction term is 22.6% in the low sensation seekers while it is revealed to be 34.7% within the high sensation seekers. This indicates that the moderator has a strong influence on the relationship between the sensation seeking and internalizing behaviour problems. The  $\beta$  value for the interaction effect is negative indicating that the relationship reveals prediction in negative direction in the low sensation seekers group and positive for high sensation seekers thus revealing that the patterns of moderation within low sensation seekers and high sensation seeker groups vary and are opposite.

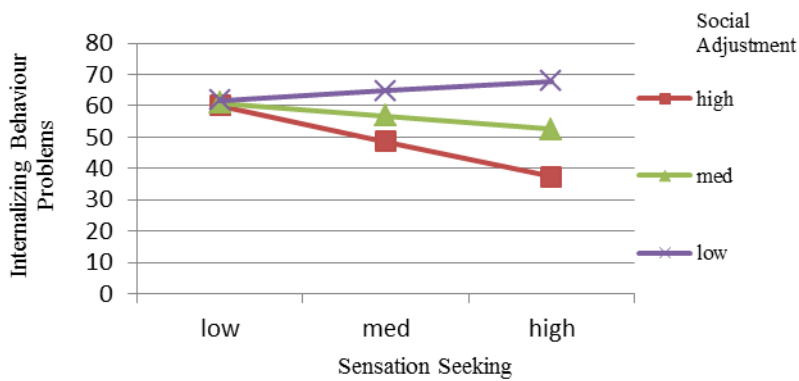


Figure 2. Moderation of the effect of Sensation Seeking on Internalizing Behaviour Problems by Social Adjustment within low Sensation Seekers.

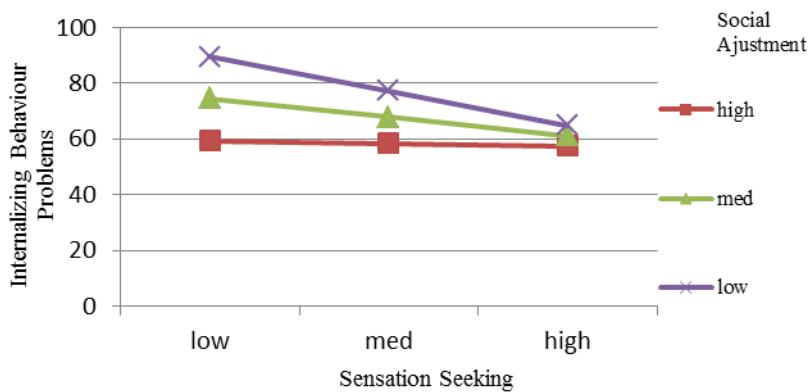


Figure 3. Moderation of the effect of Sensation Seeking on Internalizing Behaviour Problems by Social Adjustment within high Sensation Seekers.

Figure 2 shows mod-graph for the moderation by social adjustment on the effect of sensation seeking for internalizing behaviour problems. The mod-graph reveals the negative direction of prediction for high level of social adjustment. After computation of the significance of slopes it was shown that  $t = 4.6$  ( $p < .00$ ) for high level of social adjustment,  $t = 2.59$  ( $p < .01$ ) for medium level of social adjustment, and  $t = 1.25$  ( $p > .05$ ) for low level indicating strong relation for high and medium level.

On the other hand, Figure 3 reveals the mod-graph of the moderation by social adjustment on the effect of sensation seeking upon internalizing behaviour problems within high sensation seekers. The mod-graph reveals that for low levels of social adjustment the relationship is negative but becomes close to neutral at higher level of social adjustment. The computation of the significance of slopes revealed that  $t = .21$  ( $p > .05$ ) for high level of social adjustment,  $t = 2.99$  ( $p < .01$ ) for medium level of social adjustment, and  $t = 2.19$  ( $p < .05$ ) for low level of social adjustment. The values reveal that moderation is stronger for medium and low level of social adjustment.

**Sensation seeking and behaviour problems.** The moderation of the effect of sensation seeking on overall behaviour problems by social adjustment was assessed using the regression analysis and moderation was not significant for high sensation seeking group. The remaining results revealed are as following.

Table 4

*Moderation of the effect of Sensation Seeking on Behaviour Problems by Social Adjustment (N=277)*

Models	$R^2$	$\Delta R^2$	B	$\beta$	t	p
Low Sensation Seekers						
1 Constant			101.83		12.07	.00
Gender	.31	.10	20.59	.31	3.91	.00
2 Constant			113.61		12.24	.00
Gender			12.27	.19	2.13	.03
SS			-.71	-.27	-3.09	.00
SA	.40	.16	-.11	-.06	-.83	.40
3 Constant			117.38		13.15	.00
Gender			11.84	.18	2.15	.03
SA			-2.32	-.88	-4.78	.00
SS			-.03	-.02	-.27	.78
SS * SA	.49	.24	-.04	-.67	-3.71	.00
Total Sample of Adolescents						
1 Constant			124.66		18.54	.00
Gender	.01	.01	8.51	.12	2.02	.04
2 Constant			132.15		20.46	.00

*Continued...*

Model	$R^2$	$\Delta R^2$	$B$	$\beta$	$t$	$p$
Gender			3.57	.05	.88	.37
SS			.07	.05	.93	.35
SA	.18	.17	-1.26	-.39	6.84	.00
<sup>3</sup> Constant			125.00		19.28	.00
Gender			7.30	.10	1.81	.07
SS			-.00	-.00	.10	.91
SA			-1.51	-.48	8.05	.00
SS * SA	.23	.22	-.02	-.25	4.26	.00

Note. SS = Sensation Seeking, SA = Social Adjustment.

The results show  $\beta$  value for the interaction term (sensation seeking x social adjustment) is significant thus indicating that social adjustment acts as a moderator in the relationship between sensation seeking and behaviour problems for the total adolescent sample as well as the low sensation seekers group. The variance explained by the model is 22.3% within the total adolescent sample and 24% for low sensation seekers group.

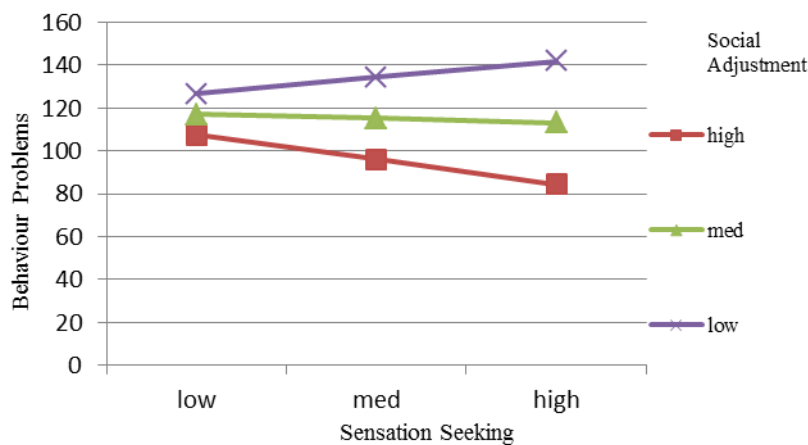


Figure 4. Moderation of Sensation Seeking on Behaviour Problems by Social Adjustment within the low Sensation Seekers.

Figure 4 reveals the mod-graph for the moderation by social adjustment on the effect of sensation seeking upon behaviour problems within low sensation seekers. The mod-graph shows that for low levels of social adjustment the relationship is positive but becomes negative at higher level of social adjustment. The computation of the significance of slopes revealed that  $t = 3.02$

( $p < .01$ ) for high level of social adjustment,  $t = .79$  ( $p > .05$ ) for medium level of social adjustment, and  $t = 2.0$  ( $p < .05$ ) for low level of social adjustment. The values reveal that moderation holds stronger for high as well as low level of social adjustment.

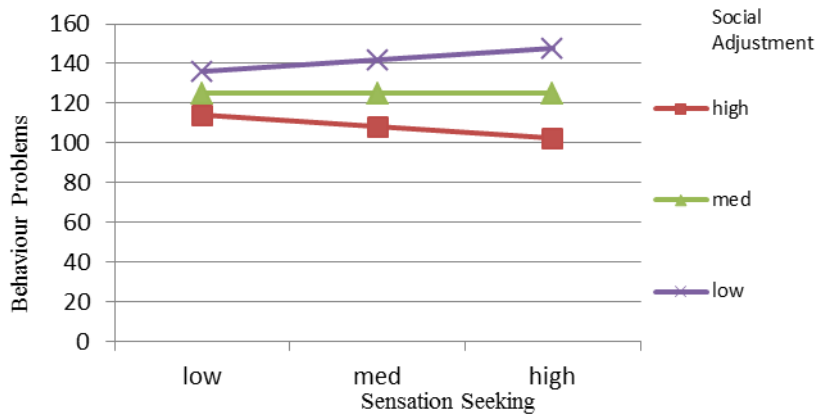


Figure 5. Moderation of the effect of Sensation Seeking on Behaviour Problems by Social Adjustment within the total Adolescent Sample.

Figure 5 is the mod-graph for the social adjustment as a moderator leading to a weakened relationship between sensation seeking and behaviour problems. The relationship between the two variables is weakened in the presence of high social adjustment as shown by the graph but simultaneously the direction of the relationship is also reversed indicating the strong influence of the moderator. The results for the mod-graph thus confirm the moderation of social adjustment for the total adolescent sample. The significance of the slopes was also computed and the results revealed that  $t = 2.15$  ( $p < .05$ ) for high level of social adjustment, while  $t = .01$  ( $p > .05$ ) for medium level of social adjustment, and  $t = 2.55$  ( $p < .05$ ) for the low level of social adjustment. The values thus reveal that relationship is stronger in case of high and low levels of social adjustment.

### Discussion

Adolescents form a major part of our population (World Population Prospects, 2011), and their health determines the well-being of the entire nation. The inappropriate and unhealthy behaviours account for maladaptive lives of adolescents and such behaviours are triggered by the adolescent tendencies towards sensation seeking (Eisenberg et al., 2002; Morris, et al., 2007; Simons et al., 2002;

Wood et al., 2002). On the other hand, social environment acts as a major contributor in influencing the tendency of a sensation seeker to develop behaviour problems (Caron & Rutter, 1991; Morris et al., 2007; Weissman & Paykel, 1974). In view of this information, the present research aimed to assess moderation of social adjustment on relationship between sensation seeking and behaviour problems. The data was collected from the schools and colleges of Islamabad and Rawalpindi, from adolescents within age range 12 to 18 years. After data collection was completed, further division of sensation seeking into low sensation seeking and high sensation seeking groups was carried out making use of both percentile scores and median. This was done in order to grasp the differences between low and high sensation seekers, with particular reference to the outcome of stimulation and novelty seeking tendencies.

Keeping in view the objectives of the research, analysis was performed to explore the relationships between the variables. The results of this research after data analysis utilizing SPSS revealed that the relationship between sensation seeking and behaviour problems is positive among total adolescent sample. These results are not only in agreement with the researches of similar nature (Helstrom, et al., 2004; Greene et al., 2000; King et al., 2004) but also an indicator of alarming as well as threatening situation as to how youth can develop pathologies. The correlation between the behaviour problems (externalizing/internalizing behaviour problems) and the social adjustment was revealed to be significantly negative including all the domains of these two scales within the total adolescent sample. Similarly significant negative relationship was revealed between sensation seeking and social adjustment, and all of the domains for both of these variables in the adolescent sample. The results are supported by existing literature (Bartlett, Belyea, & Holditch-Davis, 2007; Eisenberg et al., 2002; Farmer et al., 2001; Helstrom, et al., 2004; King et al., 2004; Klimmes-Dougen, Slattery, & Zahn-Waxler, 2000; Morris et al., 2007). These results show that sensation seeking trait, the tendency to develop behaviour problems, and social maladjustment of an adolescent are interlinked; and, thus they act as contributing factors towards inadequate development of the adolescent.

The correlations between the total sensation seeking and the facets of behaviour problems are also noteworthy. The relationship between sensation seeking and externalizing behaviour problems is significantly positive within the total adolescent sample. On the other hand, the relationship between sensation seeking and internalizing behaviour problems is significantly negative in the total adolescents.



Both of these results are in accordance with the conceptual model for this research based upon previous research by Hersen and Gross (2008). These results are also supported by research evidence (Achenbach, 1991; Archer, 2006; Chen & Liu, 2013; Chen et al., 2002; Hane, Fox, Henderson, & Marshall, 2008; Janson & Mathiesen, 2008; Ollendick et al., 2008). The results indicate that sensation seekers are more likely to develop externalizing behaviour problems, while they are less likely to develop internalizing behaviour problems.

High sensation seekers are those individuals who require relatively higher level of stimulation and thus indulge in behaviours providing the required intensity of stimulation (Zuckerman, 2007). They view the environment as less risky and have a higher tendency to consider the situation less threatening as compared to the low sensation seekers. The low sensation seekers on the other hand anticipate the negative consequences that might occur, weigh outcomes, and believe that they might take longer time to recover. This leads to differences in indulgence among high and low sensation seekers (Zuckerman, 2007). Using the cut-off generated through the median and percentiles for the data, division of sensation seeking into low sensation seeking and high sensation seeking groups was achieved.

Significant positive correlation between the high sensation seeking and the externalizing behaviour problems was revealed. The result implies that adolescents within the high sensation seeking group who were above the cut-off score revealed a greater tendency towards externalizing behaviour problems. Thus, as the tendency towards stimulation and sensation seeking keeps increasing, the adolescent is at greater risk of developing criminal, violent, and aggressive behaviours that are debilitating for both the adolescent as well as the society. The result is supported by literature (Archer, 2006; Hersen & Gross, 2008). On the other hand, the results revealed that high sensation seekers group scored less on internalizing behaviour problems, and thus a negative relationship is revealed between high sensation seeking and internalizing behaviour problems. This result is in accordance with literature (Janson & Mathiesen, 2008; Ollendick et al., 2008).

Significant negative relationship was observed between high sensation seeking and social adjustment. The result is supported by literature (Helstrom, et al., 2004). Poor adjustment of adolescents in the social domains of social and leisure, relatives, and work (school related work) was revealed in case of high sensation seekers group. This indicates that higher sensation seeking tendency results in maladjustment in various domains of social life of an adolescent,

compromising his/her efficiency in daily life and impeding his/her relationships.

Another important contribution of this research was that a model modification was performed within that presented by Hersen and Gross (2008) with the help of existing literature such as that by Caron and Rutter (1991). The model thus formed, showed that sensation seeking is positively related to externalizing behaviour problems and negatively related to internalizing behaviour problems, while social adjustment acts as a moderator resulting in weakening of this relationship. The results supported the proposed model and the relationship of sensation seeking and externalizing problems as that of a predictor and outcome respectively was significantly reduced due to social adjustment within total sample. Significant results were also revealed in case of low and high sensation seeker groups for moderation by social adjustment on the effect of sensation seeking on internalizing behaviour problems. In case of overall behaviour problems, the significant results were revealed for moderation of the effect of sensation seeking on behaviour problems by social adjustment within the low sensation seekers and the total adolescent sample. Significant results were not obtained for the high sensation seekers. The reason might be that high sensation seekers consider environment as less risky and situation less threatening as compared to the low sensation seekers, thus differing from low sensation seeking (Zuckerman, 1994; 2007).

The nonsignificant moderation effects of sensation seeking on internalizing behaviour problems by social adjustment indicates that the association of sensation seeking to internalizing behaviour problems is not affected as a function of social adjustment of an adolescent. Such a variation in the results might be due to the nature of the sample that was from urban institutions only. There is research evidence revealing that the parenting practices vary in urban and rural areas with mothers monitoring their children more in urban communities within African American sample thus reducing the chances for development of internalizing behaviour problems (Armistead, Forehand, Brody, & Maguen, 2002). Chances are any such practices might exist in the local context also. Resultantly internalizing behaviour problems might be monitored more often as compared to externalizing behaviour problems because aggressive tendencies are tolerated for children these days usually attributing such tendencies to media and violent games and thus much adjustment difficulties are not experienced with minimized chances of behaviour problems (Ferguson, Miguel, Garza, & Jerabeck, 2012). Another important fact noteworthy is the unique pattern of moderation of effect

of sensation seeking on internalizing behaviour problems by social adjustment with low sensation seekers. The results show that high level of social adjustment results in development of internalizing behavior problems among low sensation seekers. On the other hand, social adjustment strengthens the negative relationship between sensation seeking and internalizing behavior problems among high sensation seekers. The results reflect that high and low sensation seekers have marked differences in developmental needs. It shows that decreased tendency of sensation seeking might in itself prove to be detrimental for the psychological health of adolescents with particular developmental needs. The results signify that further research is required to firmly establish the extent of differences between the two groups of high and low sensation seekers.

### **Implication**

This research implies that management of risk takers and high sensation seekers is to be learned that involves the grooming of the parents and establishing a ground level of understanding on how there are genetic differences between individuals along with the significance of environment that can lead to both behaviour problems as well as maladjustment (Eisenberg et al., 2002; Morris et al., 2007). Simultaneously, the research implies that it is important to understand the immense significance of family, extended family, school setting, and peer relations for the healthy and problems free development of an adolescent as is shown by moderation effects of social adjustment on the relationship between sensation seeking and behaviour problems. The research also shows that the direction of results revealed for this research within a local sample are consistent with the global trends observed in existing literature. It lays the ground for future research related to sensation seeking. Resultantly, this research is of significance, for the mental health practitioners, social workers, educationists, curriculum designers, parents, and adolescents themselves, to understand the underlying causes for the on-set of various forms of behaviour problems and implications of sensation seeking along with maladjustment in social domains.

### **Limitations**

Limitations of this research include shortage of time and limitation of resources. The sample was adequate in number as 280 adolescents were participants but data was collected on convenience

basis. Limited number of schools agreed to allow participation of their students in the research and thus large amount of data was generated from few specific regions. Another important drawback is that one of the questionnaires was in English and could not be translated in Urdu due to time constraint and the complexity of model. This led to comprehension difficulties. The students asked questions during data collection, despite modifications in the scale. The data was collected from the adolescents of Islamabad and Rawalpindi only; and just as reliability is a measure for a particular sample and testing conditions, the results of this research cannot be generalized to other samples and conditions. The research could not address the conceptual model in all its complexity and further research on this topic is required.

### **Conclusion**

Results of this research revealed that higher sensation seeking tendency can lead to externalizing behaviour problems and a decrease in internalizing behaviour problems among adolescents. Sensation seeking and behaviour problems (externalizing/internalizing behaviour problems) were found to be negatively related with social adjustment. Another noteworthy contribution of this research was that social adjustment was revealed to moderate the effect of sensation seeking on behaviour problems within the low sensation seekers as well as the total adolescent sample. In case of internalizing behavior problems the moderation was significant for low and high sensation seeking groups. The moderation by social adjustment on the effect of sensation seeking on externalizing behaviour problems was revealed to be significant within the total sample of adolescents but non-significant for the low/high sensation seekers groups. This research is immense important for people belonging to various domains of life, especially practitioners, the adolescents and their families. It highlights the varied developmental needs of adolescents with respect to sensation seeking tendency and its outcomes in the form of behaviour problems as well as maladjustment.

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