



Original Research Article (Clinical)

Holistic assessment of anger in adolescents – Development of a rating scale

T.L. Alaka Mani ^{a, *}, Manoj Kumar Sharma ^b, S.N. Omkar ^c, H.R. Nagendra ^a^a SVYASA Yoga University, Bengaluru, India^b Dept of Clinical Psychology, NIMHANS, Bengaluru, India^c Dept of Aerospace Engineering, IISc, Bengaluru, India

ARTICLE INFO

Article history:

Received 1 December 2016

Received in revised form

11 April 2017

Accepted 14 April 2017

Available online 16 August 2018

Keywords:

Adolescent anger scale

Assessment of anger

Anger

ABSTRACT

Background: Anger related issues in adolescents are an important contributor to adolescent mortality and many negative developmental outcomes. Anger being the most primitive defence mechanism, determining its maladaptive nature is a complex phenomenon. Further, it lacks clarity in terms of its definition, demarcation from aggression and hostility, and also its assessment. Available anger rating scales do not represent anger adequately or comprehensively. The concept of anger is dealt with exhaustively in Indian classical texts. According to these texts, anger is an evil virtue that is born out of *Rajasic* nature and leads to momentary loss of cognitive functional abilities. Manifestation of anger occurs at behavioural (*kayika*), verbal (*vachika*) and mental (*manasika*) levels. Based on these principles, a psychometric scale is developed for assessment of anger in adolescents.

Objective: The objective of this study was to develop a psychometric scale for assessment of anger in adolescents based on behavioural (*kayika*), verbal (*vachika*) and mental (*manasika*) levels.

Materials & methods: Item generation was done referring to the existing scales, texts on spirituality and psychology. It also included discussions with children, teachers and parents. Item reduction was carried out using expert opinion, focused group discussion and factor analysis. Test-retest reliability was checked with 127 children (63 girls and 64 boys). The final scale was administered to 757 children (427 girls and 330 boys) to ascertain reliability co-efficient values.

Results: Co-efficient of Alpha value for final scale recorded 0.804. Test-retest reliability showed .835 correlation.

Conclusion: Anger can be assessed holistically using *Trikarana* (*kayika*, *vachika* and *manasika*) concept as dealt in almost all Indian classical texts. A 23-item adolescent anger scale is a comprehensive tool to assess behavioural, verbal and mental anger in adolescents.

© 2017 Transdisciplinary University, Bangalore and World Ayurveda Foundation. Publishing Services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Anger is the most frequently occurring and problematic emotion during adolescence [1]. The effects of adolescent anger are substantial and adversely affect major institutions of society such as individual, family, neighbourhoods, schools, sports and recreation [2,3]. Multi-dimensional consequences, far reaching effects, lack of conceptual clarity and non-availability of homeostatic level of anger that is considered healthy make it a complex construct to assess.

Anger assessment is generally done using self-reporting inventories and observation methods, both in clinical and non-clinical settings. Assessment is done considering factors that cause anger (stimulants), bio-physiological symptoms of anger (experience) and individual's reaction to such stimulants (response). In the absence of a specific bio-marker or a gold standard, the rating of anger levels is done based on the scores obtained in comparison with other subjects of the same group/study.

During experience and expression of anger, the limbic part in the brain (amygdala, the storehouse for emotional memories) overrides the cortex and responds irrationally and destructively. It is marked by activation of sympathetic arousal leading to sudden physical and emotional upsurge due to release of excessive hormones and neurotransmitter chemicals. The impact of this

* Corresponding author.

E-mail: alka.yoga@yahoo.com

Peer review under responsibility of Transdisciplinary University, Bangalore.

hormonal flush leads to chemical imbalance and lasts for several minutes and, at times longer, until the prefrontal cortex re-engages and acts. Despite the universality of its physiology, variations in terms of conceptualisation, perception and expression of anger explains the complexity of embodiment of anger [4]. Further, experience and expression of anger vary with respect to age [5], culture [6] and gender [7].

Anger is a strong predictor of violence [8], peer pressure, narcissistic personality [9] and suicidal tendency [10]. Adolescent anger has a negative association with academic performance, adjustment scores [11], perceived family support, self-esteem, and optimism [12] and a positive correlation with higher risk taking behaviour [13], mental health issues like depression and many negative life events [12,14,15].

According to a survey conducted in USA during 2013–14, about 58 percent of public schools recorded one or more incidents of physical attack or fight without a weapon and, 47 percent of schools recorded one or more incidents of threat of physical attack without a weapon [2]. Youth violence is a critical problem in America [2]. Studies conducted in other countries also report higher levels of anger, aggression and violent behaviours among adolescents [15–18].

On par with the global trend, anger related issues in schools and colleges in India are also on the rise. The few available studies on anger and related constructs carried out in India report negative effects of anger. Prevalence of high levels of state anger, trait anger and moderate levels of anger control were observed in 44.9%, 22.7% and 60% of children respectively, in a survey conducted among 1220 high school children in South Bangalore [19]. Another survey conducted in different cities of India reports high aggression scores in 18% of 5476 youths [20]. Aggression has shown negative correlation with interpersonal and romantic relationships among the youth in India [21]. Alcohol-dependent youths in India reported low levels of anger control, high levels of trait anger and poor quality of life [22].

Researchers across the globe have developed various theories of anger and an array of psychometric scales to measure adolescent anger [4]. Among these, Spielberger's State and Trait anger taxonomy is a widely-accepted theory. Popular adolescent anger scales are State Trait Anger Expression Inventory [23], Multi-dimensional School Anger Inventory [24] and Adolescent Anger Rating Scale [25]. The available anger scales use different frameworks and components of anger to assess; such as state anger, trait anger, anger control, anger expression, anger suppression, anger hostility, etc.

A review study reports that these scales differ from one another, as they measure different aspects of anger [26]. Another review study states that the available adolescent anger scales do not represent the construct adequately [27]. A study also reports self-reporting questionnaires for anger must be adapted for cross-cultural usage and should not be back-translated [28]. Further, these scales appear to have the limitations of culture specificity and sensitivity as the words used to describe anger have a variety of meanings in different cultures (e.g. word 'mad') [19,29,30].

The concept of anger is also dealt in Ayurveda and spiritual sciences. According to Ayurveda, anger is the result of an imbalance in the *tridosha* (3 body constitutions – *vata*, *pitta* and *kapha*), particularly excessive presence of *pitta dosha*. A study of anger and its correlation with *prakruti* reported high, moderate and low levels of anger in *vata*, *pitta* and *kapha* predominant *prakrutis* respectively [31]. According to Charaka Samhita (Ch.Ni. 1-14 and 1-22), anger, enmity and greed are the causative factors for 8 types of diseases. Further food consumed during angry state aggravates *pitta* dosha which leads to indigestion and fever.

Indian classical texts throw enormous light on the concept of anger and its management. Bhagavad-Gita (BG 2-62, 63) expounds on the concept of anger, its origin, causes, dynamics and

consequences [32]. The concept of *adhija-vyadhija* from Yoga Vasista establishes the relationship between mind and diseases. The concept of *Panchakosha* in Taittiriya Upanishad explains human existence holistically. According to it, human existence comprises of five sheaths – *Annamaya*, *Pranamaya*, *Manomaya*, *Vijnanamaya* & *Anandamaya Koshas* (gross, energy, mental, intellectual and bliss body) [33]. Anger being a strong modification of mind, is considered as a *vritti* and a variance of it, *dwesha*, is regarded as a *klesha* (obstacle) in *Patanjali Yoga Sutra* [34]. The concept of anger and various techniques of anger management are dealt in Mahanarayana Upanishad (1–56, 62-1 and 66-3) [35], Brihadaranyaka Upanishad (Chapter 5, brahmana 2, verse 1) [36], Mahabharata (vanaparva, section 27), Manyu Sukta etc.

The concept of *trikarana* (three instruments i.e. *kaya-vak-manas* (body-speech-mind)) is dealt in many texts in different contexts. The verses from Mahanarayanopanishad (156) and Srimad Bhagavatam (SB 11.2.36) describe pleading to destroy sins committed and total surrendering at *kayika vachika manasika* level respectively.

This concept of *trikarana* is considered as a guiding principle in development of this anger scale. Accordingly, anger can manifest in one or more of these domains such as *kayika* (bodily/behavioural), *vachika* (verbal) and *manasika* (mental). This way the spectrum of anger is holistically defined in the Vedic and Vedantic scriptures.

Even though anger is a major risk factor for many health problems and conducts disorders in schools and colleges, adolescent anger has received little attention from researchers. Furthermore, adolescent anger is not studied adequately in the Indian context and there are no scales developed in the Indian context to assess anger in adolescents. The aim of this study was to develop a culturally suited psychometric scale to assess anger in adolescents, by considering the well-known concept of *kayika* (behavioural), *vachika* (verbal) and *manasika* (mental) which is expounded in almost all the scriptures.

2. Materials and methods

2.1. Literary review

A thorough literary survey of Indian classical texts was carried out to understand the concept of anger from a holistic perspective. Texts such as Patanjali Yoga Sutras, Bhagavad-Gita, Yoga Vasista, Taittiriya Upanishad, Mahanarayanopanishad, Shatarudriyam and Manyu Suktam were referred to derive the operational definition for anger.

2.2. Operational definition

Anger is defined as a wave of thought that has great destructive potential. It is born out of a predominance of the *Rajasic* constituent in the body and has its origin in mind. Manifestation of anger occurs at three levels behavioural (*kayika*), verbal (*vachika*) and mental (*manasika*). At these domains, anger is either expressed directly or indirectly as detailed below.

Behavioural (Kayika): Expressions of anger using body or gestures including assaultive, hurtful, rebellious, aggressive, violent acts, self-defeating or addictive behaviours, crying etc.

Verbal (Vachika): Expressions of anger through verbal assault like abusive language, insults, contempt, disrespect, cynical humor, disgust, blaming, teasing, name calling, critical etc.

Mental (Manasika): Expressions of anger in the form of hostility, resentment, withdrawal state, disruptive thought patterns, non-cooperation, vengeance, suspiciousness, argumentative attitude, unsympathetic feeling and mental illness such as depression, anxiety, suicidal tendency etc.

2.3. Design

A self-reporting Likert scale with items pertaining to experience and expression of anger in the three domains behavioural (*kayika*), verbal (*vachika*) and mental (*manasika*) was used. Statistical procedures and tests were conducted throughout the process of scale development while considering the subjective feedback from experts and stakeholders.

The scale was developed in English language. The language and verbatim used in the scale were repeatedly modified after each administration and expert comment. Considering the overlapping nature and intricacies of anger expression in different domains, domain-wise classification was done based on the predominant expression of anger in the particular domain. Hence the process does not involve developing subscales.

2.4. Sample

Different sample sizes (high school children, both girls and boys) were considered at different stages of scale development. The 50 item scale was administered to 278 children and 35 item scale was administered to 60 children. 127 children participated in test-retest reliability process and 757 children participated in the final validation of the scale.

2.5. Inclusion and exclusion criteria

Children studying in high schools willing to take part in the study were included. Children who had difficulty in understanding the rating scale in English and/or unable to respond were excluded. Incomplete questionnaires were excluded.

2.6. Ethical considerations

Institutional ethical clearance was obtained for this study. Written consent was obtained from the children for scale administration and focus group discussions. Authored tools (STAXI 2 CA scale for comparison) and software (SPSS version 10) were used for measurements and analysis.

The scale development process was carried out in three stages. The first stage involved item generation and scale construction. In the second stage, tests of reliability and validity were carried out. In the last stage, a pilot study was conducted on a larger sample.

2.6.1. Stage I: construction of scale

Scale construction process involved item generation, focus group discussions, expert consultation, scale construction and item reduction.

Item generation: An item pool of 228 items was created based on the existing anger scales, questionnaires, anger quiz and spiritual and psychological texts.

Focus group discussion (FGD): FGD was held with a group of high school children (40 children, both girls and boys) to understand the concept of anger from their perspective. In consultation with a school psychologist, a set of 7 questions was prepared. The questions were: 'What makes you angry?', 'What are the most common factors that cause anger in you?', 'What causes more anger, moderate anger and mild anger in you?', 'What happens to you when you get angry?', 'What do you do generally when you get angry?', 'What could prevent you from getting angry?' and 'Is there any change in your anger from childhood to now? These questions were put across to the students by the school psychologist in presence of the author. The responses were noted.

Expert consultation: Many psychologists, counselors, teachers, parents and yoga experts who are working with adolescence, were

consulted to understand the concept of anger, its triggers, its styles of expression and coping mechanisms that Indian adolescents adopt.

Based on the FGD and experts' opinions, a list of triggers or factors that stimulate or influence anger in adolescents was generated. Most common factors that emerged were frustration, non-fulfilment of their demands, teasing or bullying, humiliation or embarrassment, failures, adherence to discipline (getting up early, timely eating etc.), experience of injustice, deprivation of their possessions, psychological stress, impaired health, physical appearance and sibling rivalry.

Another round of FGD was held informally with a group of 10 boys and 10 girls to prioritize these factors. Children who participated in this FGD were from the same apartment complex and were the author's acquaintances. The author felt that familiarity favoured the study as the children responded without any inhibition and were more spontaneous as compared to the first FGD held in a school setting. Among the factors listed, frustration, adherence to discipline, experience of injustice, teasing or bullying and non-fulfilment of their demands were the main causes for anger in adolescents.

Construction of statements: Considering the input from FGDs and opinions, 100 statements covering key causative factors were selected. These 100 statements were reviewed for readability, content validation and redundant statements. After the review, 58 items were retained.

Expert validation: These 58 statements were sent to 5 yoga experts, 5 psychologists, 5 parents, 5 teachers and 20 students (10 girls and 10 boys). They were asked to categorize the statements (behaviour, verbal and mental), rate the statements for their relevance (rating 1–5 with 1 being least relevant and 5 being most relevant) and to provide additional comments, if any. Based on the input, a 50 item scale was constructed with three response options 'never', 'sometimes' and 'most of the times'. This list of 50 items included questions pertaining to anger experience and anger expression at three domains.

At each stage of scale construction, emphasis was laid on empirical evidences such as considering stakeholders, particularly the children's opinion and comments. Involvement of all stakeholders provided practical insights into the concept of anger, its dynamics and coping mechanisms from different perspectives. Items were also rephrased and reworded, considering their input. For example, the word 'often' was replaced with the phrase 'most of the times'.

2.6.2. Stage II: validation of the scale

The processes of second phase included repeated administration of the scales to arrive at optimum number of items in order to establish statistical reliability and validity of the scale. Children's response to options (never, sometime, most of the time) against each question was considered important during item reduction process. Items which received more number of 'never' responses were dropped.

Field administration: The 50 items scale was administered to 278 high school children (102 boys and 176 girls). The list of 50 items is placed as [Annexure 1](#). Cronbach's alpha coefficient for internal consistency reliability for this scale was 0.803.

Factor analysis was carried out using varimax rotation with three factors, to ascertain the loading on each of the component. Factor loading against each item is shown in [Table 1](#).

Factor loading was considered as a base for further item reduction in response pattern. Thirty-five items, which had loading of more than .350 were retained. Item number 37 and 47 although had factor loading more than .350, were dropped based on response feedback and expert opinion.

Field test 1: The 35 items, 3 point Likert scale was administered to 60 children (29 boys and 31 girls). Along with this newly developed scale, an existing western adolescent anger scale (STAXI 2 CA) was also administered and the total scores were compared.

Table 1
Rotated component matrix.

Item No.	Component			Item No.	Component			Item No.	Component		
	1	2	3		1	2	3		1	2	3
1	.107	.484	-.144	18	.004	.137	.430	35	.467	-.033	-.151
2	.060	.503	-.236	19	-.055	.452	.222	36	.154	-.456	.372
3	.320	.057	-.114	20	.173	.142	.179	37	-.042	-.140	.482
4	.450	.090	-.049	21	-.046	.074	.228	38	.439	.300	-.009
5	.387	.075	-.004	22	-.103	.277	.283	39	.139	.089	.295
6	.222	.115	.075	23	.547	.133	-.334	40	.177	.524	-.054
7	.046	.104	.403	24	.540	.079	.002	41	.475	.246	.150
8	.220	.268	.130	25	.273	.443	.127	42	-.111	.381	.249
9	-.095	.344	.359	26	.378	.490	.025	43	.116	.177	.375
10	.497	-.018	-.019	27	.497	-.094	-.042	44	.381	.277	.013
11	.284	-.104	.092	28	.595	-.063	-.120	45	.021	-.068	.417
12	-.091	.290	.270	29	.345	-.084	.085	46	-.170	-.075	.377
13	.249	.389	.035	30	.220	-.100	.337	47	-.033	.358	.141
14	.263	.197	.318	31	.392	.102	.102	48	.500	-.161	.080
15	-.215	.550	.250	32	.519	.025	.039	49	.056	.283	.389
16	-.222	.478	.129	33	.392	.033	.156	50	.246	.441	.039
17	.218	.400	.232	34	.344	.152	.278				

The Cronbach's Alpha coefficient at this stage was .771. The paired t test was run on the total scores of the new scale and that of the STAXI-2CA scale. Results are presented in Table 2.

Paired sample t test results further provide strong evidence (t = .599 and p = .551) that the two scales do not differ in terms of their total mean scores.

Further item reduction was tried, considering the responses to each of the 35 items and in consultation with the co-authors. After thorough review and careful editing, the new scale with 23 items was readied for further reliability test and field trail. The scale comprised of 9 items related to experience of anger, 4 items each for expression of anger at behaviour, verbal and mind levels. Two opposite meaning items were included as a lie detector.

Test-retest reliability: The final scale of 23 items was administered twice with a gap of 10 days to 127 children in a school to assess the test-retest reliability. Pearson Correlation coefficient was observed at .835 which is significant at the 0.001 level. 't' test was carried out to ascertain gender wise mean and standard deviation scores for Test and Retest (Table 3).

To reconfirm the correlation coefficient, paired sample t test was carried out between total scores of test and retest, results of which are shown in Table 4. No statistically significant difference was observed in mean scores of test and retest.

2.6.3. Stage III: field study

The final scale with 23 items was administered to 757 children (427 girls and 330 boys) in the school setting. Cronbach's Alpha coefficient value was observed at .804. Principal Component analysis values for each item are given in Table 5.

3. Results

The anger scale developed recorded a Co-efficient of Alpha values at 0.804 during field study with 757 subjects. Test-retest reliability showed 0.835 correlations indicating no significant difference in responses to the items in the scale when administered twice with a

Table 2
Field test – paired sample statistics.

Scales	Mean	Std. deviation	Std error mean	t value	Sig (2 tailed) p value
New Scale (35 items)	66.18	8.154	1.053	.599	0.551
STAXI 2 CA (35 items)	65.53	7.965	1.028		

reasonable time gap. The scale consists of 23 items assessing anger experience and expression at behaviour, speech and mental domains.

4. Discussion

Anchored in the well-established traditional concept of Trikarana (*kayika* –physical, *vachika* –verbal and *manasika*– mental), the scale enjoys statistically significant results with alpha coefficient of .804 and test-retest correlation of .835 (significant at 0.001 level). The scale is robust enough to measure anger experiences and expressions on par with the existing western anger scale.

Holistic assessment of anger in adolescents has important practical implications for diagnosis and treatment of anger related disorders such as depression, anxiety and substance abuse [36]. Holistic assessment also has implications in promotion of mental health, reduction of violence, prevention of suicidal tendency, enhancing quality of social, occupational and romantic relationships. The developed scale can identify expression and suppression of anger and anger transformed into hostility or other propensities. The concept of *kayika*–*vachika*–*manasika* (popularly known as *kayena*–*vacha*–*manasa* or *mano-vak-karmani*) is used in the scriptures to express anything in a holistic way. Be it surrendering (*samarpana*), cleansing (*trikarana shuddhi*), praying (*smarana*) and committing sins (*papa*). Hence, assessment at all these three levels can be considered holistic or integrated approach.

The scale comprises of four components with 11 (9 + 2) items relating to experience of anger and 12 items relating to expression of anger with 4 items in each of the expression domain (*kayika*, *vachika* and *manasika*). Although the scale is holistic and covers all the aspects of anger, it does not assess styles of expression of anger distinctively. Items numbered 2 and 12 act as lie detectors in addition to assessing anger experience. However, no analysis has been made based on this criterion. Total scoring range in the three-point scale is 23–69. The scale does not provide any grades (or levels) of anger. The STAXI-2-CA scale provides 4 levels (intensity of anger) based on the percentile scores such as low anger (<25), average

Table 3
Test-retest – total means scores gender wise.

	Gender	N	Mean	Std. deviation	Std. error mean
TT	F	63	47.32	5.866	.739
	M	64	46.09	6.399	.800
RTT	F	63	47.92	5.305	.668
	M	64	46.59	5.215	.652

TT – test values, RTT – retest values, F – girls, M – boys, N – No of subjects.

Table 4
Paired samples test.

Pair	Paired Differences			t	df	Sig. (2-tailed)	
	Mean	SD	95% CI of the Diff				
			Lower				Upper
Test – retest	–0.551	3.389	–1.146	0.044	–1.833	126	0.069

Table 5
Item wise factor loading.

Item No	Loading	Item No	Loading	Item No	Loading
Item 1	.524	Item 9	.559	Item 17	.559
Item 2	.456	Item 10	.365	Item 18	.430
Item 3	.456	Item 11	.403	Item 19	.531
Item 4	.482	Item 12	.576	Item 20	.546
Item 5	.397	Item 13	.415	Item 21	.369
Item 6	.440	Item 14	.415	Item 22	.397
Item 7	.546	Item 15	.558	Item 23	.470
Item 8	.464	Item 16	.510		

Items are listed as [annexure 2](#).

anger (26–75), elevated anger (76–89) and high anger (>90). The STAXI-2-CA scale considers anger expression-out, anger-expression-in and anger control as the three mechanisms that are used to express and control anger [23]. However, the theory lacks clarity in distinguishing between anger suppression and anger control.

Studies on adolescent anger have reported differences in anger with respect to gender [5], culture [6], and age [7,23]. However, this study did not explore the differences in these factors. Further, this study was conducted in schools where the children came from similar socio-economic background. The samples were not representative of the adolescent community. Hence definitive, substantive interpretations could not be made, based on the samples used in this study. Future studies are recommended to take representative samples from different backgrounds such as urban, rural, various socio-economic strata etc.

This comprehensive assessment of anger can provide specific direction for assessment of anger management or coping strategies. Indian scriptures emphasize on overcoming anger while suggesting a number of coping mechanisms. This needs to be thoroughly studied before bringing them into the framework of a scale. Interestingly, a book chapter of National Institute of Health, USA publication talks about 'protective factors' in addition to 'risk factors' of youth violence [37] which could be explored. The scale could also provide basis for development of effective intervention programs.

An observation during administration of scale was that the children were not aware of their emotions and feelings and had difficulty in identifying different emotions. They were excited after filling up the questions and were curious to know their anger status. The scale acted more as an awareness building tool.

Though the present findings cannot be generalized for the adult population, the principle of assessing anger at *kayika*, *vachika* and *manasika* dimensions could be well applied to assess experience and expression of anger in adults. The novelty of this work is the humble attempt made to bring the *trikarana* concept for objective assessment to provide holistic approach. Hence the unique strength of this scale is that it is a combination of two attributes: it measures anger holistically and can be used cross-culturally.

5. Conclusion

The first of its kind, anger scale for adolescents, is a statistically reliable and validated scale to assess anger at behavioural (*kayika*),

verbal (*vachika*) and mental (*manasika*) dimensions. This scale paves way for more studies focusing integration of traditional concepts and modern scientific methods to assess psychological constructs.

Sources of Funding

This scale development process is a part of a research project funded by Sri. Venkateswara Vedic University, Tirupati vide their letter dated SVVU/TPT/Vedic Sc. Cell (CVSR)/45/2014 dated 11.01.2016.

Conflict of interest

None.

Acknowledgements

The authors sincerely acknowledge the financial assistance of Sri.Venkateswara Vedic University, Centre for Veda-Science Research, Tirupati for this study. We specially acknowledge Dr. Thomas Brunner, one of the authors of STAXI 2 CA scale who shared with us the scale along with the professional manual free of cost and also accorded permission to use the scale in this study. We also thank Dr. Binukumar, Bio-statistics division, NIMHANS for his assistance in statistical analysis of the data.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://doi.org/10.1016/j.jaim.2017.04.010>.

References

- [1] Blum Robert Wm, Gates William H, Qureshi Farah. Morbidity and mortality among adolescents and young adults in the United States, AstraZeneca Fact Sheet. Johns Hopkins Bloomberg School of Public Health; 2011. http://www.jhsph.edu/research/centers-and-institutes/center-for-adolescent-health/_images/_pre-redesign/az/US%20Fact%20Sheet_FINAL.pdf.
- [2] Zhang Anlan, Musu-Gillette Lauren, Oudekerk Barbara A. Indicators of school crime and safety. USA: National Centre for Educational Statistics; 2015. NCES 2016-079. <https://nces.ed.gov/pubs2016/2016079.pdf>.
- [3] David-Ferdon C, Simon TR. Preventing youth violence: opportunities for action. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2014. <https://www.cdc.gov/violenceprevention/youthviolence/pdf/opportunities-for-action.pdf>.
- [4] Potegal Michael, Stemmler Gerhard, Spielberger Charles, editors. International handbook on anger (2010). Springer Science; 2010. <http://dx.doi.org/10.1007/978-0-387-89676-2>.
- [5] Chaplin Tara M, Aldao Amelia. Gender differences in emotion expression in children: a meta-analytic review. *Psychol Bull* © 2012 Am Psychol Assoc 2013;139(No. 4):735–65. <http://dx.doi.org/10.1037/a0030737>. 0033-2909/13/\$12.00.
- [6] Zoltán Kövecses, Cross-cultural experience of anger: a psycholinguistic analysis, *International Handbook of anger*. <http://dx.doi.org/10.1007/978-0-387-89676-2010>.
- [7] Mamta, Sharma Nov Rattan. Across gender comparison in anger expression. *Global International Research Thoughts*; October–December 2013.
- [8] Hubbard Julie A, McAuliffe Meghan D, Rubin Ronnie M, Morrow Michael T. The anger–aggression relation in violent children and adolescents. 2006 [Book chapter].
- [9] Hernawati Lucia, Rahayu Esti, Soejowinoto Petrus. The predictors of Indonesian senior high school students' anger at school. *J Educ Pract* 2015;6(23).
- [10] Ghanizadeh Ahmad. Gender difference of school anger dimensions and its prediction for suicidal behaviour in adolescents. *Int J Clin Health Psychol* 2008;8(2):525–35.
- [11] Munni R, Malhi P. Adolescent violence exposure, gender issues and impact. *Indian Paediatr* 2006;43(7):607–12.
- [12] Puskar Kathryn, Ren Dianxu, Bernardo Lisa Marie, Haley Tammy, Stark Kirsti Hetager. Anger correlated with psychosocial variables in rural youth. *Compr Pediatr Nurs* 2008;31(2):71–87. [http://dx.doi.org/10.1080/0146086\[21\]0802023513](http://dx.doi.org/10.1080/0146086[21]0802023513).
- [13] Kim-Spoon Jungmeen, Holmes Christopher, Deater-Deckard Kirby. Attention regulates anger and fear to predict changes in adolescent risk-taking behaviors. *J Child Psychol Psychiatry* 2015 July;56(7):756–65. <http://dx.doi.org/10.1111/jcpp.12338>.

- [14] Terasaki Dale J, Gelaye Bizu, Berhane Yemane, Williams Michelle A. Anger expression, violent behavior, and symptoms of depression among male college students in Ethiopia. *BMC Public Health* 2009;9:13. <http://dx.doi.org/10.1186/1471-2458-9-13>.
- [15] Avci Dilek, Kilic Mahmut, Selcuk Kevser Tari, Uzuncakmak Tugba. Levels of aggression among Turkish adolescents and factors leading to aggression. *Issues Ment Health Nurses* July 2016:476–84. <http://dx.doi.org/10.4088/JCP.15m10044>.
- [16] Nasir Rohany, Ghani Norisham Abd. Behavioral and emotional effects of anger expression and anger management among adolescents. *Procedia Soc Behav Sci* 2014;140:565 [Science Direct].
- [17] Itani O, Kaneita Y, Munezawa T, Ikeda M, Osaki Y, Higuchi S, et al. Anger and impulsivity among Japanese adolescents: a nationwide representative survey. *J Clin Psychiatry* 2016 Jul;77(7):e860–6. <http://dx.doi.org/10.4088/JCP.15m10044>.
- [18] Zhang P, Roberts RE, Liu Z, Meng X, Tang J, Sun Lin, et al. Hostility, physical aggression and trait anger as predictors for suicidal behavior in Chinese adolescents: a school-based study. *PLoS One* 2012;7(2):e31044. <http://dx.doi.org/10.1371/journal.pone.0031044>.
- [19] Alaka Mani TL, Sharma Manoj Kumar, Marimuthu P, Omkar SN, Nagendra HR. Anger assessment among high school children. *Int J CMPR* August, 2016;2(Issue 8):585–90.
- [20] Sharma Manoj Kumar, Marimuthu Palaniappan. Prevalence and psychosocial factors of aggression among youth. *Indian J Psychol Med* 2014-36:48–53.
- [21] Sharma MK, Mohan Raju. Relationship of Personality Dimensions and aggression in romantic relationship among youth. *Indian J Psychol Med* 2013;35(2):197–202.
- [22] Sharma MK, Suman LN, Murthy Pratima, Marimuthu Palaniappan. State-trait anger and quality of life among alcohol users. *Ger J Psychiatry* 2012;14(2):60–5.
- [23] Brunner TM, Spielberger CD. The state trait anger expression inventory. *Child Adolescent (STAXI-C/A)*. 2nd ed. Sarasota, Florida: Psychological Assessment Resources; 2009.
- [24] Smith DC, Furlong MJ, Bates M, Laughlin J. Development of the multidimensional school anger inventory for males. *Psychol Sch* 1998;35:1–5.
- [25] Burney DeAnna McKinnie, Kromrey Jeffrey. Initial development and score validation of the adolescent anger rating scale. *Educ Psychol Meas* June 2001;61(3):446–60. <http://dx.doi.org/10.1177/00131640121971310>.
- [26] Kerr Matthew A, Schneider Barry H. Anger expression in children and adolescents: a review of the empirical literature. *Clin Psychol Rev* 2008;28:559–77.
- [27] Jimerson S, Furlong MJ, editors. The handbook of school violence and school safety: From research to practice. 1st ed. Erlbaum. pp. 135–146.
- [28] Moscoco Manolete S, Spielberger Charles D. Cross-cultural assessment of emotions: the expression of anger. *Rev Psicol* 2011;29(2). ISSN: 0254-9247.
- [29] Barchard KA, Grob KE, Roe MJ. 'Is sadness blue? The problem of using figurative language for emotions on psychological tests. *Behav Res Methods* 2017 Apr;49(2):443–56.
- [30] Yoo Seung Hee, Chung Joanne M. The expression of anger across cultures. *Researchgate*; book chapter January 2010. http://dx.doi.org/10.1007/978-0-387-89676-2_8.
- [31] Sharma Nitin, Sharma Rashi, Parekh Gaurav R, Indapurkar Kavita V. Study of krodha (anger) and it's co-relation with prakruti. *Int Ayurvedic Med J IAMJ* February- 2015;3(Issue 2).
- [32] Saraswati Sri Sri Sachidaanandrendra. *Srimad Bhagavad Gita (Kannada)*. 9th ed. Bengaluru: Adhyatma Prakasha Karyalaya; 2012. p. 140–1.
- [33] Sethumadhavan TN. *Taittiriya Upanishad—a brief translation*, Esamskriti.com. November 2011. p. 34–43 [Brahmananda vallii, Anuvaka 2, 3, 4, 5].
- [34] Vivekananda Swami. *Raja Yoga (41st reprint)*. Kolkata: Advaita Ashrama; 2012. p. 171.
- [35] Vimalananda Swami. *Maharayanopanishat*. 2nd ed. Mysore: Sri Ramakrishna Mutt; 1968. p. 76–7. 266–267 and 277 [Chapter 1, verse 56, Chapter 62 verse 1, Chapter 66, verse 3].
- [36] Lench Heather C. Anger management: diagnostic differences and treatment implications. *J Soc Clin Psychol* 2004;23(No. 4):512–31.
- [37] NCBI Bookshelf. A service of the National Library of Medicine, National Institutes of Health; Chapter 4 – Risk factors for youth violence. 2001.