

## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)



Mohanapriya K<sup>1</sup>, Dr. T Jothimani<sup>2</sup>

<sup>1</sup>Ph.D. Research Scholar, Department of Psychology, PSG College of Arts & Science, Coimbatore -641014

<sup>2</sup>Assistant Professor, Department of Psychology, PSG College of Arts & Science, Coimbatore-641014.

**ABSTRACT:** Adolescence is an important period in the life span which includes physical, and psychological changes. These changes can be difficult for an adolescent to adjust which can lead to different adversities. Sometimes overcoming such adversities can be problematic and leads to cognitive distortions known as biased thinking.

**Aim:** the study aims to measure self-serving cognitive distortions in school drop -out boys.

**Sample:** The sample size is n=40, and the samples were collected from various places in Madurai District, Tamil Nadu using the Purposive sampling method.

**Materials:** informed consent form, socio-demographic variables, and the How I think questionnaire ( Barriga, et al, 2001).

**Results:** From the results, it was found that the scoring for the dimensions Self-centered, blaming others, minimizing/mislabeling, assuming the worst, oppositional defiance, physical aggression, lying, and stealing fall under the clinical category which means there exists externalizing psychopathology. The study shows that the samples tend to engage in deviant behavior like aggression, violent behaviors, stealing, substance use, and criminal behavior.

**KEYWORDS:** Adolescence, cognitive distortions, school dropout, deviant behaviour

### INTRODUCTION

Adolescence is an important stage of development in the lifespan of a human being because it is the transition period from childhood to adulthood. The life span of adolescents has difficulties as there is a transition in physical, social, and psychological aspects, other than that they are faced with making important decisions regarding their education since it sets the path for their career. Education is important for a person's individual development (cognition and behavior). In recent years, particularly after the Covid-19 crisis adolescence faced many problems with physical, psycho-social, and education. The Students had difficulty coping with the regular curriculum setting even before covid. The covid break was the major reason for school dropout. Since the school dropping out increased, youths became at risk of externalizing problems. Many adolescents' problem behavior starts in school and family environments like rejection by parents, and friends, social, academic failures, and drug use are considered problematic behavior identified by parents and teachers. Every year, a large number of students drop out of school worldwide. The reasons behind adolescent school dropouts include family situations like unemployment, living in poverty, receiving public assistance, being in prison, being unhealthy, divorce of parents, and having a single parent (Gonzales NA et al., 2004, and Freudenberg N, Ruglis J (2007). Students, who move from primary school to higher secondary school is a higher chance of getting a school dropout (Amit Choudhury 2006). Adolescents are facing many challenges difficulties in academics, changes in peer groups, and changes in the school environment. Students feelings such as shy or withdrawn behavior, worrying, sadness, loneliness, and low sense of self-worth are unavoidable situations in the classroom setting (Novak and Mihić, 2017). During adolescence, vulnerability –stress and risk-taking behavior are precipitating factors of dropout. These varieties of stressors are more common among high school students who drop out than among similar peers who do not, including school mobility, teen parenting, family instability, foster care placement, health problems, and hospitalizations. Adolescents drop out of school, which increases the risk of developing socio-emotional problems and urging them into criminal activities (Prevatt and Kelly, (2003); Lochner and Moretti, 2004; Bradshaw et al (2008). Esch et al., 2014; Bradshaw et al., 2008) Research suggested that children who identified with early behavioral problems are a risk of developing academic problems and experiencing rejection from peers, leading to contact with deviant peers that turn into maladjustment acts such as truancy, substance use, or violent behavior. Crosnoe and Riegle-Crumb, 2007, in their research, substance use with school dropout and unclear ranging from cognitive and neurobiological defects to

## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)

learning difficulties and low academic performance are linked. Bridgeland et al. (2006) in their research, 38% of school dropouts believed that they broke rules and regulations, skipped classes, and engaged in outdoor activities. This lack of rules seemed to relate both to lack of order and discipline at school as to substance use and juvenile antisocial behavior. According to Wilkins and Bost (2016), truancy might indicate that students are potentially disengaged from school and that a trajectory toward dropping out is likely. Truancy has been regarded as a resistance to the school culture (Zhang, 2007) which results in negative developmental outcomes such as deviant behaviors, crime, and delinquency.

### Mental health problems in adolescence

Mental health problems are among the most common health conditions affecting children and adolescents. The adolescence period is the onset of mental disorders in 50% of a lifetime (Jane-Llopis E and Braddick F (2008). Mental health problems are found among 10-20% of adolescents, and studies indicate an increase in the frequency (Kieling C et al, 2011, Bor W, 2014). Psychiatric disorders associated with dropout are categorized into internalizing disorders and externalizing disorders. Internalizing disorders are those that tend to be composed of relatively covert symptoms, which are cognitive symptoms, to observe. The internalizing disorders are including symptoms of anxiety, social phobia, depression, or major depression (Fletcher, 2008; Needham, 2009). Newer American epidemiological studies state (Merikangas KR, et al., 2010) that there are a prevalence of 32% of anxiety disorders and 14.3% of mood disorders in the group of youth from 13 to 18 years old, while around 8% of American youth had a major depressive disorder. A British study included younger children, from 5 to 15, and found a prevalence of 3.7% for any anxiety disorder. The 1-year incidence rate for the first onset of major depression in adolescents is between 5.6 and 10%, while 17.9% of adolescents have a recurrent episode within a year Adolescent depression is associated with high rates of co-morbid anxiety disorders, disruptive behavior disorders, and suicide attempts. It predicts future adjustment problems including marital difficulties, unemployment, and attachment problems in offspring (Barrera AZ et al., 2007; Seeley JR et al, 2002; and Lewinsohn PM et al., 1993). Externalizing disorders are overt, highly observable either directly or indirectly (such as in the outcome of certain antisocial behaviors), and typically expressed as behavioral excess. The externalizing disorders are conduct disorder or oppositional defiant disorder (Rapport, Scanlan, et al., 1999). Attention deficit hyperactivity disorder (ADHD) is characterized by difficulty in sustaining mental focus or physical control (Barkley, Fischer, et al., 2006; Galera, Melchior, et al., 2009). Substance use disorders are characterized by excessive or dysfunctional substance use or physiological symptoms of substance dependence (Breslau, Lane, et al., 2008). Fortin, Marcotte, Potvin, Royer & Joly (2006) their research variables related to behavior problems, academic results, level of family functioning, level of emotional support from parents, and the classroom climate, the author's categorized at-risk students into four subgroups: (1) the Anti-Social Covert behavior type, (2) the Uninterested in school type, (3) the School and Social Adjustment Difficulties type, and (4) the Depressive type. In light of their multi-factorial conceptualization of school dropout risk, Fortin, et al. (2006) conclude the existence of several possible developmental pathways leading to potential school dropout.

Negative emotional and behavioral reactions might be produced and maintained by irrational beliefs and deleterious thinking patterns also known as self-debasing cognitive distortions (Clark & Beck, 2010). The cognitive distortions in thinking are caused by faulty and ineffective information procession resulting from inconsistent, irrational, and erroneous ways of thinking (Rehna, Hanif & Aqil, 2020). A self-debasing cognitive distortion is defined as unhelpful thoughts that can debase an individual directly or indirectly, which in turn can evoke or strengthen negative emotional and behavioral responses to events (Barriga, et al., 2008). The term self-serving cognitive distortions were introduced to define cognitive distortions Self-serving cognitive distortions protect the individual from self-blame and a negative self-concept, these distortions are associated with externalizing and antisocial behaviors, including aggression and delinquency. (Barriga et al., 2000). Self-debasing cognitive distortions influence a person's interpretation and appraisal of events and increase the likelihood of negative reactions to events (Akkoyunu & Turkcapar, 2012; Clark, 2014). Self-debasing cognitive distortions are associated with internalizing behaviors (e.g., misattributing helplessness 14 to oneself is associated with depression), whereas self-serving cognitive distortions are associated with externalizing behaviors. Cognitive distortions are characterized as biases in the processing that mediates between incoming stimuli and behavioral responses. Gibbs and Potter (Gibbs, 1991; Gibbs, Potter & Goldstein, 1995) introduced a four-category typological model of self-serving cognitive distortions: Self-Centered, Blaming Others, Minimizing/Mislabeled, and Assuming the Worst. Self-Centered cognitive distortions are defined as attitudes where the individual focuses on his/her own opinions, expectations, needs, and rights to such an extent that the opinions or needs of others hardly ever or never are considered or respected. Blaming Others involves cognitive schemas of misattributing the blame for one's own behavior to sources outside the individual (i.e. external locus of control). Minimizing is defined as distortions where the antisocial behavior is seen as an acceptable, perhaps necessary, way to achieve certain goals. Mislabeled is defined as a belittling and dehumanizing way of referring to others. Finally, Assuming the

## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)

Worst represents cognitive distortions where the individual attributes hostile intentions to others, considers the worst-case scenario as inevitable or sees his/her behavior as beyond improvement.

### RESEARCH METHODOLOGY

**Aim:** Measuring self-serving cognitive distortions in school drop-out boys

**Objectives:** To find the self-serving cognitive distortions in school drop-out students.

**Sample:** The sample size is n=40, and the samples were collected from various places in Madurai District, Tamil Nadu. For this study, Purposive sampling techniques were used.

#### Tools used for the study and Description of the tools.

1. Inform consent form
2. Socio-demographic details - Name, Age, gender, living area, education, parents' status, smoking behavior, drug usage, and previous history of crime basic demographic details were collected
3. The How I Think Questionnaire (Barriga, & Potter, 2001) was used to examine cognitive distortions. It has 54 items and is designed on a six-point Likert rating scales that range from strongly disagree to strongly agree. There are 8 sub-scales of this questionnaire including Self-Centered (SC), Lying (L), Minimizing/ Mislabeled (MM), Opposition Defiance (OD), Blaming Others (BO), Stealing (S), Assuming the Worst (AW), Physical Aggression (PA) (Bogestad, Kettler & Hagan, 2010). Two summary scale scores can also be obtained i.e., overt and covert besides having a total score. If an adolescent or a youth circles two responses to an item, a higher value was scored.

**POPULATION:** The students (N= 40) Students who drop out of school from various locations in Madurai District.

**SAMPLE:** The children who drop out of schools the boys located in different areas of the Madurai district were selected for the present study. A sample of (n = 40) students were randomly selected and recruited for the present study with their consent.

**PROCEDURE:** The samples (n =40) were administered with the informed consent form, and Personal Information Schedule to obtain their personal and socio-demographic information. After the fulfillment of all requirements, the scale How I think Questionnaire (HIT) was administered the test was conducted. After collecting the response, they were scored based on the scoring key. The results were tabulated, and statistical analysis was done.

**STATISTICAL ANALYSIS:** Mean, Standard Deviation, Frequency, and Percentage were used for analyzing the collected data. The statistical analyses were done with the help of SPSS.

### RESULTS AND DISCUSSION

**Results:** The study results determine interesting findings regarding the distribution of thinking errors in form of cognitive distortions in school dropout children in the Madurai district.

**Table 1. shows the demographic details of school drop- out children's (Boys)**

S.NO	Demographic variables	Category	Frequency	Percentage (%)
1	Age	13 years	2	5%
		14 years	5	12.5%
		15 years	6	15%
		16 years	6	15%
		<b>17 years</b>	<b>14</b>	<b>35%</b>
		18 years	7	17.5%
	Mean Age	<b>16.35</b>		
2	Gender	Male	40	100%
3	Education Drop out	6 <sup>th</sup> Standard	5	12.5%
		7 <sup>th</sup> Standard	4	10%
		8 <sup>th</sup> Standard	13	32.5%
		<b>9<sup>th</sup> Standard</b>	<b>16</b>	<b>40%</b>
		10 <sup>th</sup> Standard	2	5%
4	Reason for dropping out	Difficulty in studies	17	42.5%

## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)

		Family situation	1	2.5%
		<b>Lack of interest</b>	<b>22</b>	<b>55%</b>
5	Parents status	<b>Living together</b>	<b>18</b>	<b>45%</b>
		Total orphan	10	25%
		Separated/divorced	12	30%
6	Living area	Rural	2	5%
		<b>Semi-urban</b>	<b>38</b>	<b>95%</b>
7	Smoking behavior	<b>Yes</b>	<b>37</b>	<b>92.5%</b>
		No	3	7.5%
8	Alcohol and drugs	<b>Yes</b>	<b>36</b>	<b>90%</b>
		No	4	10%
9	Years of usage	<b>1</b>	<b>12</b>	<b>30%</b>
		<b>2</b>	<b>12</b>	<b>30%</b>
		3	8	20%
		4	4	10%
		5	4	10%
10	Any previous history of crimes?	<b>Yes</b>	<b>22</b>	<b>55%</b>
		No	18	48%

### DISCUSSION

Among the demographic variables, the mean age of the respondents is 16.35; for this study, only boys (n = 40) were selected. The category of school education dropout rates are from 6<sup>th</sup> standard is 12.5%; 7<sup>th</sup> standard 10%, 8<sup>th</sup> standard 32.5%, 9<sup>th</sup> standard 40% and 10<sup>th</sup> standard the education dropout percentage is 5%. The category of school education dropout is a slightly high percentage in the 9<sup>th</sup> standard (40%) the reason behind dropout is a transition from middle to high school as transferring schools leads to new peer groups and new environments. The reason for school dropout is categorized into 3, three categories, first, difficulties in studies 42.5%, the second category is due to the family situation percentage 2.5% and the third category is lack of interest in studies (55%) is highly predominant. Research shows that students' academic achievement is one of the factors in school dropout (Wood, et al., 2017). In this study parents' marital status was identified. Parents living together are 55%, parents separated or divorced 30% and orphans 15%. Family support is important for the emotional and psychological development of the child. When there is a lack of family support, it can lead to traumatic behavioral change in the Child. Research studies show that dropout is mediated by other factors, such as familial or personal factors (Suh & Suh, 2011). In the living area, semi-urban areas have a high percentage, 95%. The semi-urban boys are easily vulnerable to substance use, school dropout, and engaging in other activities. (Bachman, J.G., et al., 2008; Maynard, B.R., et al., 2015; Townsend L., F et al., 2007) Research studies show that students who drop out of high school may experience a higher risk for problems related to the use of nicotine, alcohol, cannabis, and other illegal drugs. This study shows 48% of boys have a history of crime and 90% of smoking and drinking behavior. Substance use may develop health problems, sexual behavior, accidents, homicides, suicides, violence, and self-injury behaviors.

**Table 2. shows the mean and interpretation of dimensions of cognitive distortions**

	HIT Total	Self-centered	Blaming others	Minimizing/ Mislabeled	Assuming the worst	Opposition defiance	Physical aggression	Lying	stealing
<b>Mean</b>	25.81	3.78	3.79	3.63	3.28	3.80	3.63	3.72	3.64
<b>Percentile</b>		96	92	92	90	94	92	88	96

The mean values for the dimensions of cognitive distortions as follows self-centered, the mean value is 3.78; the percentile is 96; Blaming others mean value is 3.79, and the percentile is 92; minimizing/Mislabeled value is 3.63 and the percentile is 92; assuming the worst value is 3.28 and percentile is 90; oppositional defiance score value is 3.80 and 94 percentile; physical aggression score is 3.63 and 92 percentile; the lying score is 3.72 and 88 percentile; stealing is 3.64 and 96 percentile. from the interpretation of mean values shows that All the above dimensions are falls under clinical category which means externalizing psychopathology is present. The study shows that the samples may show deviant behavior like aggression, violent behaviors, stealing, substance use, and also lead to criminal behavior. According to Barriga et al., (1999), higher scores on the scales indicate higher levels of cognitive distortions and are associated with criminal behavior.

## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)

### CONCLUSION

The school dropout children have high level (clinical range) scores in all subscales (HIT, self-centered, blaming others, Minimizing/Mislabeling, assuming the worst, oppositional defiance, physical aggression, lying, stealing, and overall overt subscales and covert subscales). This study shows out the cognitive distortions subscale, the behavioral referent is in the clinical range. This may lead to various internalizing and externalizing behavior problems.

- The children need cognitive interventions that precisely address this biased thinking.
- The study helps to understand the importance of the role of self-serving cognitive distortions of adolescents. And this helps to prevent antisocial behavior.
- There is a need for cognitive behavioral therapy. Thus, treatment programs can reduce the likelihood of antisocial/criminal behavior by reducing adolescents' cognitive distortions.

### FUTURE DIRECTIONS

The study sample size can increase to find cognitive distortions among adolescence. A prevalence study can conduct on school students female samples also can be used to find differences and the impact of life events. Intervention studies can help both the adolescent and the researcher. Future studies need adolescent training on adolescent coping skill intervention, parenting skills intervention, family strengthening programs, and school counselors

### REFERENCES

- 1) Amit Choudhury. (2006). Revisiting Dropouts: Old Issues, Fresh Perspectives. *Economic and Political Weekly*, 41(51), 5257–5263. <http://www.jstor.org/stable/4419056>.
- 2) Bachman, J.G., O'Malley, P.M., Scheulenberg, J.E., Johnston, L.D., Fredoman-Doan, P., Messersmith, E.E. (2008). The Education-Drug Use Connection: How Success And Failures In School Relate To Adolescent Smoking, Drinking, Drug Use, And Delinquency. Taylor & Francis, New York.
- 3) Barrera AZ, Torres LD, Muñoz RF. (2007). Prevention of depression: The state of the science at the beginning of the 21st century. *International Review of Psychiatry*. 2007; 19(6):655-670. DOI: 10.1080/09540260701797894.
- 4) Barkley, R., Fischer, M., et al. (2006). Young Adult Outcome of Hyperactive Children: Adaptive Functioning in Major Life Activities. *Journal of the American Academy of Child and Adolescent Psychiatry* 45(2): 192-202.
- 5) Bloom D. (2010). Programs and policies to assist high school dropouts in the transition to adulthood. *Future Child*. Spring; 20(1):89-108. DOI: 10.1353/foc.0.0039. PMID: 20364623.
- 6) Bor W, Dean AJ, Najman J, Hayabakhsh R. (2014). Are child and adolescent mental health problems increasing in the 21<sup>st</sup> century? A systematic review. *Aust N Z Psychiatry*. 48:606-16.
- 7) Bradshaw, Catherine & Waasdorp, Tracy & Leaf, Philip. (2012). Effects of School-Wide Positive Behavioral Interventions and Supports on Child Behavior Problems. *Pediatrics*. 130. 10.1542/peds.2012-0243
- 8) Bridgeland, John & Dilulio, John & Morison, Burke. (2005). *the Silent Epidemic Perspectives of High School Dropouts*. Washington, DC: Civic Enterprises.
- 9) Breslau, J., Lane, M., et al. (2008). Mental Disorders and Subsequent Educational Attainment in an Us National Sample. *Journal of Psychiatric Research* 42(9): 708-716.
- 10) Clark DA, Beck AT. (2010). Cognitive theory and therapy of anxiety and depression: convergence with neurobiological findings. *Trends Cognitive Science* Sep; 14(9):418-24. DOI: 10.1016/j.tics.2010.06.007. E pub 2010 Jul 23. PMID: 20655801.
- 11) Crosnoe, R., & Riegle-Crumb, C. (2007). A Life Course Model of Education and Alcohol Use. *Journal of Health and Social Behavior*, 48(3), 267–282. <https://doi.org/10.1177/002214650704800305>
- 12) Dupéré, V., Leventhal, T., Dion, E., Crosnoe, R., Archambault, I., & Janosz, M. (2015). Stressors and Turning Points in High School and Dropout. *Review of Educational Research*. <https://doi.org/10.3102/0034654314559845>
- 13) Esch, P., Bocquet, V., Pull, C. et al. (2014). The downward spiral of mental disorders and educational attainment: a systematic review on early school leaving. *BMC Psychiatry* 14, 237. <https://doi.org/10.1186/s12888-014-0237-4>
- 14) Freudenberg N, Ruglis J (2007) Reframing school dropout as a public health issue. *Prevention Chronic Dis*. Oct; 4(4): A107.
- 15) Fletcher, J. (2008). Adolescent Depression: Diagnosis, Treatment, and Educational Attainment. *Health Economics* 17(11): 1215-1235.
- 16) Galera, C., Melchior, M., et al. (2009). Childhood and Adolescent Hyperactivity-Inattention Symptoms and Academic Achievement 8 Years Later: The Gazel Youth Study. *Psychological Medicine* 39(11): 1895-1906.



## Measuring Self-Serving Cognitive Distortions in School Dropout Adolescents (Boys)

- 17) Gonzales NA, Dumka LE, Deardorff J, Carter SJ, McCray A, et al.(2004). Preventing poor mental health and school dropout of Mexican American adolescents following the transition to Junior High School. *Journal Adolescence Research*.19:113–31.
- 18) Jané-Llopis, E. and Braddick, F. (Eds). 2008. Mental Health in Youth and Education. Consensus paper. Luxembourg: European Communities
- 19) Kieling C, Baker-Henningham H, Belfer M, et al.(2011). Child and adolescent mental health worldwide: evidence for action. *Lancet*; 378:1515-25.
- 20) Lochner, L., & Moretti, E. (2004). The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports. *The American Economic Review*, 94(1), 155–189. <http://www.istor.org/stable/3592774>
- 21) Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA. Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III—R disorders in high school students. *Journal of Abnormal Psychology*. 1993;102(1):133. DOI: 10.1037/0021-843X.102.1.133
- 22) Li, Huijun & Zhang, Ying. (2008). Factors Predicting Rural Chinese Adolescents' Anxieties, Fears and Depression. *School Psychology International* - 29. 376-384. 10.1177/0143034308093676.
- 23) Maynard, B.R., Salas-Wright, C.P., Vaughn, M.G. (2015). High school dropouts in emerging adulthood: substance use, mental health problems, and crime. *Community Mental Health Journal*. 51, 289– 299.
- 24) Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J. (2010). Lifetime prevalence of mental disorders in US adolescents: Results from the National Comorbidity Survey Replication—Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*. 49(10):980-989. DOI: 10.1016/j.jaac.2010.05.017
- 25) Needham BL. (2009) Adolescent depressive symptomatology and young adult educational attainment: an examination of gender differences. *Journal of Adolescent Health*. Aug; 45(2):179-86. DOI: 10.1016/j.jadohealth.2008.12.015. Mar 17. PMID: 19628145.
- 26) Novak, Miranda & Mihic, Josipa. (2018). Prevention of Internalized Problems of Children and Youth in Academic Setting. ISBN:978-1-78923-730-6, DOI:10.5772/intechopen.75590.
- 27) Prevatt, F., & Kelly, F. D. (2003). Dropping out of school: A review of intervention programs. *Journal of School Psychology*, 41(5), 377–395. [https://doi.org/10.1016/S0022-4405\(03\)00087-6](https://doi.org/10.1016/S0022-4405(03)00087-6)
- 28) Rapport, M., Scanlan, S., et al. (1999). Attention-Deficit/Hyperactivity Disorder and Scholastic Achievement: A Model of Dual Developmental Pathways. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 40(8): 1169-1183.
- 29) Rehna T, Hanif R, Aqeel M. (2020). Moderating Role of Gender on the Relationship between Cognitive Errors and Anxiety among Adolescents. *Foundation University Journal of Psychology*. 4(1):86-102.
- 30) Rumberger, R. W. & Lim, S. A. (2008). Why Students Drop Out of School: A Review of 25 Years of Research. *California Dropout Research Project*. Policy Brief 15. UC Santa Barbara.
- 31) Seeley JR, Rohde P, Lewinsohn PM, Clarke GN. (2002). Depression in youth: Epidemiology, identification, and intervention. In: Interventions for Academic and Behavior Problems II: Preventive and Remedial Approaches. Washington, DC, US: National Association of School Psychologists.
- 32) Townsend L., Flisher AJ, King G. (2007). A systematic review of the relationship between high school dropout and substance use. *Clinical Child Family Psychology Review*.10 (4):295–317, 2007



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.