



Editorial

Emotional Dysregulation in Adolescents: Implications for the Development of Severe Psychiatric Disorders, Substance Abuse, and Suicidal Ideation and Behaviors

Domenico De Berardis ^{1,*}, Michele Fornaro ², Laura Orsolini ^{3,4}, Antonio Ventriglio ⁵, Federica Vellante ⁶ and Massimo Di Giannantonio ⁶

- NHS, Department of Mental Health, Psychiatric Service for Diagnosis and Treatment, Hospital "G. Mazzini", ASL 4, 64100 Teramo, Italy
- Department of Psychiatry, Federico II University, 80138 Naples, Italy; dott.fornaro@gmail.com
- Psychopharmacology, Drug Misuse and Novel Psychoactive Substances Research Unit, School of Life and Medical Sciences, University of Hertfordshire, Hatfield AL109AB, UK; laura.orsolini01@gmail.com
- ⁴ Unit of Clinical Psychiatry, Department of Clinical Neurosciences/DIMSC, Polytechnic University of Ancona, 60126 Ancona, Italy
- Department of Psychiatry, University of Foggia, 71121 Foggia, Italy; a.ventriglio@libero.it
- Department of Neurosciences and Imaging, University "G. D'Annunzio" Chieti, 66100 Chieti, Italy; federica.vellante@gmail.com (F.V.); digiannantonio@unich.it (M.D.G.)
- * Correspondence: domenico.deberardis@aslteramo.it; Tel.: +39-086-142-9708; Fax: +39-086-142-9709

Received: 16 August 2020; Accepted: 23 August 2020; Published: 26 August 2020



Abstract: Well-tuned emotional regulation is fundamental for human life and psychological well-being. Negative physiological emotions are counterbalanced by positive ones, and this equilibrium is the mainstay of human physiological affective states. However, this mechanism may sometimes become dysfunctional when negative emotions are not correctly counterbalanced, causing maladaptive behaviors, especially during adolescence. A very interesting review by Young et al. was recently published (*Brain Sci.* **2019**, *9*(*4*), *7*6) and stimulated us to reflect on this topic. The screening for emotional disturbances and dysregulation in adolescents must be included in all the preventive and interventional programs aimed to achieve both physical and psychological well-being of the population and early intervention should be provided in order to avoid progression toward clinically relevant psychiatric disorders in late adolescence and adulthood.

Keywords: adolescence; emotions; regulation; anxiety; depression; suicidal ideation; addiction; alexithymia; prevention

Adolescence, to date, is a high-risk period for developing several psychiatric disorders, and adolescents' psychological well-being and mental health should be the first target of every prevention plan [1].

We know that adolescents may experience a wide range of emotions, often in an "all-or-nothing" way, experiencing them in extreme ways and quickly changing emotional states in response to environmental, parental, social, and internal factors [2]. This does not imply that such occurrence should always be considered a psychological disorder indicator. Still, it might be associated with a wide range of impulsive behaviors and reactions that are somewhat physiological for most, but within a certain set limits [3].

Emotional regulation can be described as how a person sustains, strengthens, or impedes his emotions according to his purposes or goals [4]. Emotional regulation is fundamental for human life, and well-being and emotions are usually in a balance between them. Negative physiological

Brain Sci. 2020, 10, 591 2 of 5

emotions are counterbalanced by positive ones, and this equilibrium is the mainstay of human physiological affective states [5]. However, this delicate and refined mechanism may sometimes become dysfunctional when negative emotions are not correctly counterbalanced [6]. This imbalance may cause maladaptive behaviors, especially during adolescence, a period where emotional states should be finely regulated [7].

A fascinating and scientifically sound review entitled "Positive and negative emotion regulation in adolescence: links to anxiety and depression" was recently published in *Brain Sciences* [8] and stimulated us to reflect on this topic. In this article, the authors reviewed the literature and correctly concluded that the disruptions in emotion regulation [8] are often associated with a higher probability of developing anxiety and depressive symptoms during adolescence [8]. Moreover, and this is one of the main findings of the review, these disturbances in emotion regulation are very predictive, rather than consequences, of forthcoming adult psychopathology. Interestingly, compromised abilities in emotional regulation may confer a further overall risk for all kinds of psychopathology, independently from its clinical appearance [8].

Some central questions raised by this excellent review could be "when the emotional regulation becomes dysfunctional, why, what will happen in this case, and what to do?"

Several studies have pointed out that emotional regulation may become dysfunctional when the regulation of negative and painful emotions is not counterbalanced adequately by positive and pleasant emotions, leading to an inability to tolerate intense, unpleasant, and persistent emotional states [9,10]. These persistent states are bothersome for the adolescent and may easily trigger the development of a "turmoil" of mixed anxious and depressive symptoms [10]. This outcome may be particularly dangerous in the adolescent, as he might try to regulate these undesired states and symptoms, for example, with substances use and abuse (especially cannabis or entactogen substances such as MDMA), addictive behaviors (Internet Addiction, Internet Gaming Disorder, Mobile-Phone Addiction, Online Gambling), and impulsive and risky conducts (including non-suicidal self-harm injuries) [11,12]. As a consequence, the emergence of suicidal ideation, together with the worsening of the psychiatric symptoms and hopelessness, rapidly becomes critical [13].

The apparent advantages of substance use and addictive behaviors are modifications in mood and personal experiences, relaxation and pleasure, and coping strategies against social anxiety, distress, tension, and, above all, persistent painful emotional states [14]. Still, these changes heavily reinforce the addiction, representing a temporary solution or a continuative coping strategy for handling developmental tasks ("escapism") [12,15]. However, a vicious circle is triggered, and the more emotional dysregulation, the more reactive maladaptive strategies, and the more adolescent psychophysical health will be impacted with significant repercussions also in adulthood [16,17]. Moreover, suicide ideation and attempts in adolescents, even if often caused by psychiatric disorders, are reinforced by substance use together with psychosocial problems such as problems with individuals in the family and school environment, problems in interpersonal relationships, significant stress experiences, loneliness, competitiveness in school and home, and suicide history in the family [18,19]. Proper emotional regulation is the key to reduce the risk of the circumstances mentioned above, and preventive strategies must be put in place [20].

Not in all cases can the causative factors for emotional dysregulation be quickly and clearly found, and these should be accurately and empathically investigated in adolescence. Such factors include childhood traumas and maltreatment, sexual or physical abuse, neglect, learning disabilities, being a victim of bullying, parental distress, conflicts, severe parental psychiatric disorders, etc. [21,22]. In our opinion, when assessing an adolescent with unexplained emotional dysregulation, all those abovementioned issues should be considered.

In the review by Young et al. [8], the authors have correctly analyzed the pros and cons of several self-report tests that are easy to use as screening instruments for emotional regulation disturbances such as the Emotion Regulation Questionnaire (ERQ), the Difficulties in Emotion Regulation Scale (DERS), the Cognitive Emotion Regulations Questionnaire (CERQ), and the Fragebogen zur Ehrebung her Emotions regulation bei Kindern und Jugenlichen (FEEL-KJ).

Brain Sci. 2020, 10, 591 3 of 5

In addition, behavioral assessment and peripheral psychophysiological correlates of emotion regulation were reviewed and can be conducted, but these procedures are more sophisticated, may require training for the assessor, and may be used further to evaluate ambiguous cases or persons positive to self-rating scales. Neuroimaging studies using functional Magnetic Resonance Imaging (fMRI) are very intriguing, but their use is, to date, limited to the clinical research.

In some cases, no antecedents can be found, and therefore, we believe that the possible presence of alexithymia should also be suspected and evaluated [23].

The alexithymic trait is often associated with impaired cognitive processing and regulation of emotions, and therefore, is likely to cause emotion regulation difficulties [24]; Taylor et al. have conceptualized alexithymia as a real "disorder of emotional regulation" [25]. The adolescents with significant levels of alexithymia manifest habitually higher subjective negative affects relative to autonomic activity irrespective of the intensity of environmental stresses [26]. The experimental observations have pointed out that persons with alexithymia have a greater tendency towards long-lasting negative emotions and show a propensity to suppress emotional expression to cope with these unpleasant and insupportable emotions [27]. The presence of alexithymia makes the adolescent more vulnerable, especially if the vulnerability has a genetic basis and may, per se, trigger anxiety, depression, substance abuse, and suicide ideation [28]. Thus, the early recognition of alexithymic traits should be implemented and the use of treatments that specifically focus on enhancing emotion must be administered [29,30].

Concerning neurobiological findings, the review by Young et al. [8] has demonstrated altered activation and connectivity in the amygdala and across regions of the prefrontal cortex to explain disrupted emotional regulation. These regions are implicated quite the same in alexithymia, suicidal ideation, and addiction, but these findings need further confirmations [31].

Concerning interventions, following Young et al. [8], we recommend the early administration of the Cognitive Behavioral Therapy (CBT) that underlines cognitive restructuring and encourages the use of reappraisal [32], and, as a second line of treatment, the so-called 'third wave' psychotherapies (i.e., mindfulness-based cognitive therapy, dialectical behavioral therapy) that converge on acceptance and decentering to regulate emotions [33]. There are also useful emotional-centered psychotherapies (such as Contextual Emotion Regulation Therapy and Emotion Regulation Therapy) that may be of particular importance, even before starting CBT or other 'third wave' psychotherapies, to restore an "emotional background" before starting structured psychotherapy [34]. The Positive Affect Treatment seems very promising and may also be employed in persons with alexithymic traits [35]. However, we believe that in severe cases, a concurrent pharmacotherapy should be considered based on the clinical picture and the neurobiological findings [36].

In conclusion, there is a need to detect early and evaluate dysfunctional and maladaptive emotional regulation in adolescents to prevent the development of psychiatric sequelae in adulthood. The screening for emotional regulation disturbances and alexithymia is relatively easy using validated self-report scales and can be further supported by behavioral and psychophysiological evaluations when available. The neural basis of emotional dysregulation is intriguing (such as reduced amygdala activation, and increased inverse ventrolateral prefrontal cortex–amygdala connectivity) [8], but further studies are needed. The risk of developing anxious and depressive symptoms in persons with unrecognized and untreated emotional dysregulation is high, and this is often further complicated by substance abuse, addictive behaviors, and suicidal ideation and attempts, generating a vicious circle that will be hard to break [37,38].

Thus, in our opinion and in accordance with the results of the review by Young et al. [8], the screening for emotional disturbances and dysregulation in adolescents must be included in all the preventive and interventional programs aimed to achieve both physical and psychological well-being of the population as it is "better safe than sorry". Moreover, early intervention should be provided in order to avoid progression toward clinically relevant psychiatric disorders in late adolescence and adulthood.

Conflicts of Interest: The authors declare no conflict of interest.

Brain Sci. 2020, 10, 591 4 of 5

References

1. Griffin, E.; McMahon, E. Adolescent mental health: Global data informing opportunities for prevention. *EClinicalMedicine* **2020**, 24, 100413. [CrossRef] [PubMed]

- 2. Bariola, E.; Gullone, E.; Hughes, E.K. Child and adolescent emotion regulation: The role of parental emotion regulation and expression. *Clin. Child Fam. Psychol. Rev.* **2011**, *14*, 198–212. [CrossRef]
- 3. Main, A.; Lougheed, J.P.; Disla, J.; Kashi, S. Timing of adolescent emotional disclosures: The role of maternal emotions and adolescent age. *Emotion* **2019**, *19*, 829–840. [CrossRef]
- 4. Williams, J.H.G.; Huggins, C.F.; Zupan, B.; Willis, M.; Van Rheenen, T.E.; Sato, W.; Palermo, R.; Ortner, C.; Krippl, M.; Kret, M.; et al. A sensorimotor control framework for understanding emotional communication and regulation. *Neurosci. Biobehav. Rev.* **2020**, *112*, 503–518. [CrossRef]
- 5. Tamir, M.; Gutentag, T. Desired emotional states: Their nature, causes, and implications for emotion regulation. *Curr. Opin. Psychol.* **2017**, *17*, 84–88. [CrossRef]
- 6. Grandey, A.A.; Melloy, R.C. The state of the heart: Emotional labor as emotion regulation reviewed and revised. *J. Occup. Health Psychol.* **2017**, 22, 407–422. [CrossRef]
- 7. Flouri, E.; Mavroveli, S. Adverse life events and emotional and behavioural problems in adolescence: The role of coping and emotion regulation. *Stress Health* **2013**, *29*, 360–368. [CrossRef]
- 8. Young, K.S.; Sandman, C.F.; Craske, M.G. Positive and Negative Emotion Regulation in Adolescence: Links to Anxiety and Depression. *Brain Sci.* **2019**, *9*, 76. [CrossRef]
- 9. Waugh, C.E. The roles of positive emotion in the regulation of emotional responses to negative events. *Emotion* **2020**, *20*, 54–58. [CrossRef]
- 10. Van Beveren, M.L.; Goossens, L.; Volkaert, B.; Grassmann, C.; Wante, L.; Vandeweghe, L.; Verbeken, S.; Braet, C. How do I feel right now? Emotional awareness, emotion regulation, and depressive symptoms in youth. *Eur. Child Adolesc. Psychiatry* **2019**, *28*, 389–398. [CrossRef]
- 11. Wills, T.A.; Pokhrel, P.; Morehouse, E.; Fenster, B. Behavioral and emotional regulation and adolescent substance use problems: A test of moderation effects in a dual-process model. *Psychol. Addict. Behav.* **2011**, 25, 279–292. [CrossRef]
- 12. Nikmanesh, Z.; Kazemi, Y.; Khosravy, M. Study role of different dimensions of emotional self-regulation on addiction potential. *J. Fam. Reprod. Health* **2014**, *8*, 69–72.
- Flores-Kanter, P.E.; Garcia-Batista, Z.E.; Moretti, L.S.; Medrano, L.A. Towards an Explanatory Model of Suicidal Ideation: The Effects of Cognitive Emotional Regulation Strategies, Affectivity and Hopelessness. Span. J. Psychol. 2019, 22, E43. [CrossRef] [PubMed]
- 14. Saberi Zafarghandi, M.B.; Khanipour, H.; Ahmadi, S.M. Typology of Substance Use Disorder Based on Temperament Dimensions, Addiction Severity, and Negative Emotions. *Iran. J. Psychiatry* **2018**, *13*, 184–190. [PubMed]
- 15. Leite, K.P.; Martins, F.M.P.; Trevizol, A.P.; Noto, J.R.S.; Brietzke, E. A critical literature review on emotional intelligence in addiction. *Trends Psychiatry Psychother.* **2019**, *41*, 87–93. [CrossRef] [PubMed]
- 16. Koob, G.F. The dark side of emotion: The addiction perspective. *Eur. J. Pharmacol.* **2015**, 753, 73–87. [CrossRef] [PubMed]
- 17. Torres, A.; Catena, A.; Megias, A.; Maldonado, A.; Candido, A.; Verdejo-Garcia, A.; Perales, J.C. Emotional and non-emotional pathways to impulsive behavior and addiction. *Front. Hum. Neurosci.* **2013**, 7, 43. [CrossRef]
- 18. Swee, G.; Shochet, I.; Cockshaw, W.; Hides, L. Emotion Regulation as a Risk Factor for Suicide Ideation among Adolescents and Young Adults: The Mediating Role of Belongingness. *J. Youth Adolesc.* **2020**. [CrossRef]
- 19. Hatkevich, C.; Penner, F.; Sharp, C. Difficulties in emotion regulation and suicide ideation and attempt in adolescent inpatients. *Psychiatry Res.* **2019**, 271, 230–238. [CrossRef]
- 20. Rice, T.R. Emotion regulation and adolescent suicide: A proposal for physician education. *Int. J. Adolesc. Med. Health* **2015**, *27*, 189–194. [CrossRef]
- 21. Peh, C.X.; Shahwan, S.; Fauziana, R.; Mahesh, M.V.; Sambasivam, R.; Zhang, Y.; Ong, S.H.; Chong, S.A.; Subramaniam, M. Emotion dysregulation as a mechanism linking child maltreatment exposure and self-harm behaviors in adolescents. *Child Abuse Negl.* **2017**, *67*, 383–390. [CrossRef]
- 22. Weinberg, A.; Klonsky, E.D. Measurement of emotion dysregulation in adolescents. *Psychol. Assess.* **2009**, *21*, 616–621. [CrossRef]

Brain Sci. **2020**, 10, 591 5 of 5

23. Ng, C.S.M.; Chan, V.C.W. Prevalence and associated factors of alexithymia among Chinese adolescents in Hong Kong. *Psychiatry Res.* **2020**, 290, 113126. [CrossRef] [PubMed]

- 24. De Berardis, D.; Fornaro, M.; Orsolini, L.; Valchera, A.; Carano, A.; Vellante, F.; Perna, G.; Serafini, G.; Gonda, X.; Pompili, M.; et al. Alexithymia and Suicide Risk in Psychiatric Disorders: A Mini-Review. *Front. Psychiatry* **2017**, *8*, 148. [CrossRef]
- 25. Taylor, G.J.; Bagby, R.M.; Parker, J.D.A. Disorders of Affect Regulation: Alexithymia in Medical and Psychiatric Illness; Cambridge University Press: Cambridge, UK; New York, NY, USA, 1997; p. 359.
- 26. Demers, L.A.; Schreiner, M.W.; Hunt, R.H.; Mueller, B.A.; Klimes-Dougan, B.; Thomas, K.M.; Cullen, K.R. Alexithymia is associated with neural reactivity to masked emotional faces in adolescents who self-harm. *J. Affect. Disord.* **2019**, 249, 253–261. [CrossRef] [PubMed]
- 27. Serafini, G.; De Berardis, D.; Valchera, A.; Canepa, G.; Geoffroy, P.A.; Pompili, M.; Amore, M. Alexithymia as a possible specifier of adverse outcomes: Clinical correlates in euthymic unipolar individuals. *J. Affect. Disord.* 2020, 263, 428–436. [CrossRef] [PubMed]
- 28. Joukamaa, M.; Taanila, A.; Miettunen, J.; Karvonen, J.T.; Koskinen, M.; Veijola, J. Epidemiology of alexithymia among adolescents. *J. Psychosom. Res.* **2007**, *63*, 373–376. [CrossRef]
- 29. Parker, J.D.; Eastabrook, J.M.; Keefer, K.V.; Wood, L.M. Can alexithymia be assessed in adolescents? Psychometric properties of the 20-item Toronto Alexithymia Scale in younger, middle, and older adolescents. *Psychol. Assess.* **2010**, 22, 798–808. [CrossRef] [PubMed]
- 30. Terock, J.; Janowitz, D.; Grabe, H.J.; Freyberger, H.J.; Schneider, W.; Klauer, T. Alexithymia and Psychotherapeutic Treatment Motivation: Main and Interactional Effects on Treatment Outcome. *Psychother. Psychosom.* **2017**, *86*, 185–186. [CrossRef]
- 31. Meza-Concha, N.; Arancibia, M.; Salas, F.; Behar, R.; Salas, G.; Silva, H.; Escobar, R. Towards a neurobiological understanding of alexithymia. *Medwave* **2017**, *17*, e6960. [CrossRef]
- 32. Davies, C.D.; Niles, A.N.; Pittig, A.; Arch, J.J.; Craske, M.G. Physiological and behavioral indices of emotion dysregulation as predictors of outcome from cognitive behavioral therapy and acceptance and commitment therapy for anxiety. *J. Behav. Ther. Exp. Psychiatry* **2015**, *46*, 35–43. [CrossRef]
- 33. Flynn, D.; Kells, M.; Joyce, M.; Suarez, C.; Gillespie, C. Dialectical behaviour therapy for treating adults and adolescents with emotional and behavioural dysregulation: Study protocol of a coordinated implementation in a publicly funded health service. *BMC Psychiatry* **2018**, *18*, 51. [CrossRef]
- 34. Grecucci, A.; Frederickson, J.; Job, R. Editorial: Advances in Emotion Regulation: From Neuroscience to Psychotherapy. *Front. Psychol.* **2017**, *8*, 985. [CrossRef]
- 35. Craske, M.G.; Meuret, A.E.; Ritz, T.; Treanor, M.; Dour, H.; Rosenfield, D. Positive affect treatment for depression and anxiety: A randomized clinical trial for a core feature of anhedonia. *J. Consult. Clin. Psychol.* **2019**, *87*, 457–471. [CrossRef]
- 36. Yamawaki, S.; Okada, G.; Okamoto, Y.; Liberzon, I. Mood dysregulation and stabilization: Perspectives from emotional cognitive neuroscience. *Int. J. Neuropsychopharmacol.* **2012**, *15*, 681–694. [CrossRef]
- 37. Schweizer, S.; Gotlib, I.H.; Blakemore, S.J. The role of affective control in emotion regulation during adolescence. *Emotion* **2020**, *20*, 80–86. [CrossRef] [PubMed]
- 38. Compas, B.E.; Jaser, S.S.; Bettis, A.H.; Watson, K.H.; Gruhn, M.A.; Dunbar, J.P.; Williams, E.; Thigpen, J.C. Coping, emotion regulation, and psychopathology in childhood and adolescence: A meta-analysis and narrative review. *Psychol. Bull.* **2017**, *143*, 939–991. [CrossRef]



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).