The Relationship Between Giftedness and Depression: A Systematic Review

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Abstract

This paper aims to answer the question: Is intellectual giftedness in human beings, when compared to the normal intelligence of individuals, associated with the experience of depression or depressive disorder? Considering this question, a systematic review was carried out in five databases (Embase, Web of Science, Scopus, SciELO and PubMed). In addition, research was also carried out in the gray literature. Considering the inclusion and exclusion criteria, the results point to depression in gifted individuals is related to: self-esteem; internalizing behaviors; stress; protective and/or risk factors; suicidal ideation; perfectionism; emotional adjustment. The diversity of criteria for giftedness or psychometric tests used restricts the possibility of conclusion; however, points of convergence are observed. In the one hand, four studies found that the gifted were less depressed than average-achieving students, but two papers found the opposite. Two studies confirm the proposition that girls are more depressed than boys in the same condition. On the other hand, the results of four papers demonstrate that, among the gifted, boys are more depressed than girls. After completing the review, the hypothesis of revising the giftedness model was considered. According to the Iceberg Model, giftedness is characterized by four factors: above-average ability, task commitment, creativity, and work capacity. The exogenous and endogenous factors, also represented in the model, do not characterize the gifted student; however, they can decisively influence its manifestation.

Keywords: giftedness, depression, systematic review, intelligence, iceberg model

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Introduction

Since the first academic studies on giftedness, the following question has remained: Is there a relationship between giftedness and depression? The question admits two conflicting answers. For Francis et al. (2016) and Guénolé et al. (2015), gifted individuals would be capable of a greater understanding of themselves and others due to their cognitive ability, which would protect them from depression. Neihart (1999) points out that these individuals would be more sensitive to interpersonal conflicts and stress than their peers as result of their cognitive ability.

Gifted students have characteristics that make them different from others. In addition to having the ability to understand and explain complex concepts in a variety of topics or to develop expertise in a specific area or topic (Nielsen, 2002), these individuals may experience a sense of frustration when their ability to deal with demands falls below expectations (Neihart, 2002). Since they are not accustomed to failure, feelings of frustration can cause psychological disorders such as depression, anxiety, and stress (Bakar & Ishak, 2014). The potential and uniqueness of gifted children's abilities can lead them to feel fear, existential anxiety, and personal suffering, so that they may not be able to take advantage of their abilities (Seely, 2004).

Regarding the relationship between giftedness and depression, the results of Terman's (1925) research suggested that gifted individuals exhibited a lower incidence of mental illness and adjustment problems than the average. However, the suicide of a student in 1981 triggered a series of studies on suicide, delinquency, anxiety, and depression in gifted populations (Neihart, 1999). Since the 1990s, research has moved in one direction or another: social adjustment or social maladjustment. Adolescents demonstrate socially and emotionally atypical behaviors because they are highly motivated, nonconformist, and independent (Csikszentmihalyi et al., 1993).

In the late 1990s, a new episode of suicide rekindled the discussion about maladjustment (Hyatt, 2010). In this case, as in others (Juvonen & Grahan, 2014), bullying intensified depression, which culminated in suicide. Bullying is recurrently associated with gifted individuals, whether as aggressors, victims or witnesses (Dalosto & Alencar, 2013; González-Cabrera et al., 2019). More recently, they began to experience a new situation: cyberbullying. The technological tools of the 21st century have become a very useful resource for gifted students, but they have acted as a catalyst for the asynchronous perpetuation of the development of these individuals, as well as increasing exposure to alienation by peers and/or aggression by peers (Mueller & Winsor, 2018).

Mood is a diffuse and persistent emotion or feeling that influences a person's behavior and colors their perception of being in the world. Mood disorders, also called affective disorders, constitute an important category of psychiatric illness (Sadock, 2017). The term “depression” does not refer to a pathology necessarily characterized by depressed mood, but to a syndrome characterized by mood and psychomotor changes, in addition to somatic and neurovegetative disorders (Assumpção Jr. & Kuczynski, 2012).

In clinical terms, all depressive disorders present as central characteristics the presence of anhedonia and/or sad, empty or irritable mood, combined with somatic and cognitive alterations that affect the individual's functionality (American Psychological Association [APA], 2014). Therefore, this paper was prepared with the objective of answering the

following question: Is intellectual giftedness in humans, when compared to normal intelligence of individuals, associated with the experience of depression or depressive disorder?

Methodology

The systematic review based on the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) for the minimum reporting items that should be addressed in a systematic review (Moher et al., 2009; Page et al., 2021). Adjustments were made, allowing greater adaptation to the present question. To define the search terms, the question was outlined by the "PECO" process (Kung et al., 2010), in which "P" refers to the population = humans with giftedness; "E", exposure = depression or depressive disorder; "C", control = individuals with normal intelligence; "O", outcome = association with intellectual giftedness. The systematic review was carried out in five scientific databases: Embase, Web of Science, Scopus, SciELO and PubMed. The following terms were used: (gifted OR giftedness) AND (depression OR depressive disorder).

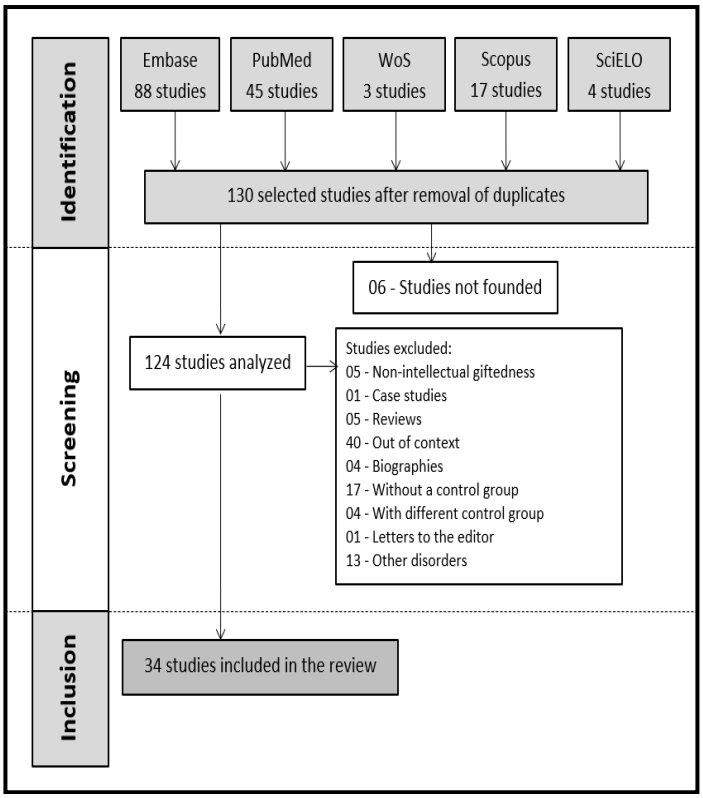
The inclusion criteria were: (a) being a scientific paper, dissertation or thesis published in a journal or platform indexed in one of the databases without date restrictions; (b) dealing with giftedness and depression. The exclusion criteria adopted were: (a) reviews; (b) biographies; (c) papers written in any language other than Portuguese, English, Spanish or French; (d) papers on non-intellectual giftedness; (e) case studies; (f) papers without a control group; (g) papers with a control group other than individuals with normal intelligence; (h) letters to the editor; (i) papers in which one of the terms had a meaning different from that of interest; (j) papers in which the terms, despite being correctly contextualized, were disconnected; (k) papers that also involved other disorders; (l) errata; (m) unavailable dissertations or theses; and (n) works of fiction or non-fiction on the research topics.

Once the review was completed, the challenge was to redesign a model that would explain the relevance of factors, named exogenous and endogenous, in the manifestation of giftedness. This model was constructed based on Sternberg's (1984) Triarchic Theory of Intelligence and Renzulli's Three-Ring Theory (1986) and Gagné's Differentiation Model of Giftedness and Talent (1985). The proposed model considered exogenous factors, such as family and school, while depression, personality, and motivation were considered endogenous factors.

Results

The search of the five databases was conducted between February 16 and 18, 2025. After converging the database data in the Mendeley program and removing duplicates, 130 papers remained. Figure 1 below presents the flowchart, according to PRISMA (Moher et al., 2009; Page et al., 2021), for the search performed. Of the 130 results, 6 papers were not found. Of the 124 papers found, 90 papers were excluded, according to the criteria described in Figure 1, leaving 34 papers for analysis. Considering the exclusion criteria, 40 papers were excluded because the terms, despite being present, were out of context. This can be understood if we take as an example the fact that the term giftedness can be associated with a gift, such as one someone receives on their birthday.

Figure 1
PRISMA Flowchart



Adapted from Moher et al. (2009) and Page et al. (2021).

Despite the diverse approaches used in the selected papers, depression was linked to the following issues: (a) self-esteem; (b) internalizing behaviors; (c) stress; (d) protective and/or risk factors; (e) suicidal ideation; (f) perfectionism; (g) emotional adjustment. By performing a qualitative analysis of these papers, grouped according to their proximity to each of these issues, the objective was to scrutinize the research, considering the context, limits, and boundary conditions of each study.

Self-Esteem

Regarding self-esteem, Brody and Benbow (1986) observed a significant difference ($p < 0.01$) between the mathematically gifted and verbally gifted groups. According to Field et al. (1998), on all perceived academic and social skills items, gifted students rated themselves as equal to or better than their academically normal peers; however, analyses of these skills yielded no significant differences, considering student self-reports and teacher observations.

Bartell and Reynolds' (1986) results demonstrated that gifted girls had higher self-esteem than gifted boys, while boys in the control group had higher self-esteem scores than girls in the same group (Bartell & Reynolds, 1986). A study conducted in France revealed that scores for academic self-esteem and total self-esteem were significantly lower ($p < 0.006$ and $p = 0.03$, respectively) than those observed in the control group, and that depression scores were significantly higher ($p = 0.021$) in gifted children. Correlation analyses revealed that the lower the total self-esteem scores, the higher the depression, hyperactivity, total psychopathology, and aggression scores (Bénony et al., 2007). Specifically, with regard to depression, Brody and Benbow (1986) observed that girls in the gifted and control groups were significantly more depressed than boys in the respective groups ($p < 0.01$). For Bartell

and Reynolds (1986), gifted boys were more depressed than gifted girls, but girls in the control group were more depressed than boys in the same group.

Internalizing Behaviors

Roy (2016) found that, among gifted children, the 10- to 18-year-old age group was vulnerable to behavioral problems. According to Merrell et al. (1996) and Roy (2016), gifted children had a higher percentage of externalizing behavior problems, especially among boys, than internalizing behavior problems. Roy (2016) also observed that gifted boys were less anxious than other boys, and gifted girls had fewer somatic problems. However, scores for externalizing behaviors were significantly higher ($p < 0.01$) among gifted children than among children with normal intelligence. According to Merrell et al. (1996), gifted students differed more substantially from their non-gifted peers on items related to self-efficacy and perceived self-importance, which corroborates the hypothesis that these individuals may be "protected," since their positive presence in children could act as a "protective" or "isolating" factor regarding insults to their socioemotional functioning and the development of internalizing forms of psychopathology.

Stress

Based on the hypothesis that stress is associated with elevated cortisol levels, Turakitwanakan et al. (2010) compared depression between gifted and typically performing children by measuring salivary cortisol levels. Although the results alone support the proposition that gifted individuals are more susceptible to depression and the proposition that their cortisol levels are higher, an inverse correlation was observed between the Children's Depression Inventory (CDI) score and salivary cortisol levels. Furthermore, the result was not statistically significant ($p > 0.05$).

A study by Fouladchang et al. (2010) aimed to investigate the relationship between depression, anxiety, stress, and life satisfaction among gifted and typically performing students. The results showed that girls had greater life satisfaction than boys, and students in the control group showed higher levels of life satisfaction than gifted students. However, girls had higher scores on anxiety and stress indices than boys.

Protective and/or Risk Factors

Mueller (2009) found that gifted students were significantly less depressed than control subjects, and all protective factors moderated depression in both groups. All three protective factors (self-concept, parent-family connectedness, and school belonging) were negative predictors of depression for gifted adolescents. Also based on selecting participants from a larger sample size, Robinson et al. (2002) observed that more families of gifted students fell into the category of families with higher resources (parents with higher education and employment), White/non-Hispanic, and with English as their primary language. According to parent and teacher reports, high-achieving children were thriving both socially and academically, and although they self-reportedly lacked passion for school, they demonstrated less dissatisfaction. Teachers perceived significantly ($p < 0.001$) more positive parental attitudes in high-achieving students, more strongly encouraging their children's progress (Robinson et al., 2002).

While Blumen and Lanao (2006) chose to work with at-risk children, Shahzad and Begume (2010) investigated differences in depression among gifted children from middle and upper socioeconomic backgrounds recruited from different private secondary schools in Pakistan. As a result, Blumen and Lanao (2006) observed that, regarding the number of responses, the gifted group obtained a higher median than the control group. This increase was interpreted as an indicator of intellectual potential and productive capacity. The gifted group exhibited differences in intellectual control and emotion processing. Regarding stress management and tolerance, it was observed that the gifted group presented lower values than the control group, indicating a greater tendency toward tension. However, at the same time, they showed higher "adjustment" scores, revealing a greater ability to cope with everyday situations (Blumen & Lanao, 2006). According to Shahzad and Begume (2010), gifted students clearly tended to report substantially stronger positive feelings and thoughts, with low levels of negative affect and low levels of negative self-evaluation.

In addition to the hypothesis that gifted individuals in vulnerable situations may be more susceptible to risk than others, it is also considered that gifted individuals who experience more stressful events are more likely to become depressed. The results of Johnston's (1996) study revealed that both students reported lower levels of negative affect than reported in the literature (see Kovacs, 1981). Gifted students scored lower on this measure, but these results were not significant ($p = 0.10$). Furthermore, boys reported slightly lower negative affect than girls (Johnston, 1996).

Suicidal Ideation

Using tests to measure depression and suicidal ideation, Baker (1995) demonstrated that girls reported more depression than boys in all groups, but no significant differences were found ($p = 0.90$). According to the study by Metha and McWhirter (1997), based on the results of stress measures, depression inventories, and suicidal ideation tests, it was observed that gifted students experienced significantly fewer life-changing events ($p = 0.037$). Perceived stress from life-changing events, depression levels, and suicidal ideation were similar between gifted and non-gifted participants. Suicidal ideation in the entire sample was significantly and positively correlated ($p < 0.01$) with both depression levels and past and recent stress levels.

Perfectionism

Hypothesizing that the perfectionism structure found in North American students could be generalized to a European population, Parker et al. (2001) examined perfectionism among Czech students with giftedness in mathematics. Analyses of variance yielded statistically significant differences ($p = 0.000$, $p = 0.008$, and $p = 0.02$, respectively) by group for concern about mistakes, organization, and parental criticism, with these differences being higher in the neurotypical group, while personal standards were higher for females. While non-perfectionistic individuals were found disproportionately among the gifted students, maladaptive perfectionists were overrepresented among the control group (Parker et al., 2001).

Rice and Taber's (2018) study sought evidence to support conceptualizations of perfectionism as a multidimensional construct represented by two factors: perfectionistic strivings and perfectionistic concerns. The mean differences across measures between the gifted and control groups were not statistically significant ($p = 0.38$). When the participants were divided, one group was found to have high standards, low discrepancy, and low stress

(presumed adaptive); another with high standards, discrepancy, and stress (presumed maladaptive); and a third with low standards and mid-range discrepancy (presumed non-perfectionists). No group of students was disproportionately represented; however, the authors expressed concern that approximately 8% of the students appeared to be at risk for difficulties related to problematic combinations of striving and perfectionistic concerns (Rice & Taber, 2018).

Emotional Adjustment

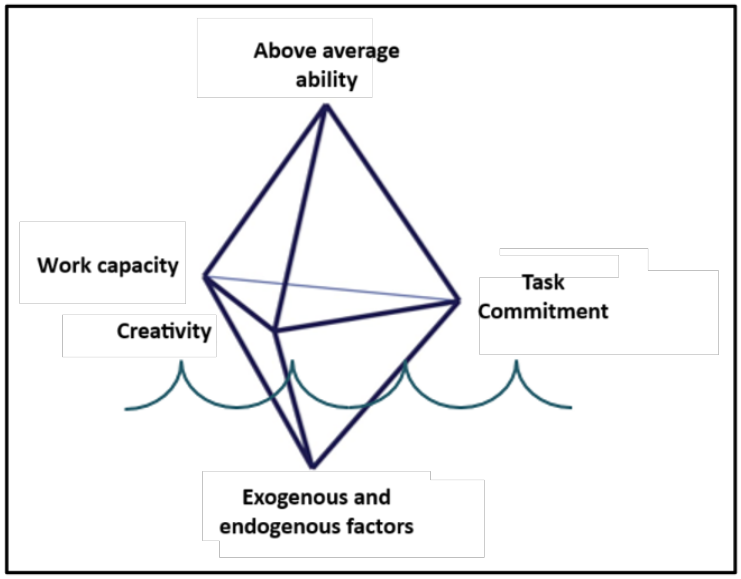
According to Richards et al. (2003), in parental assessments, gifted adolescents demonstrated lower levels of problem behavior and anxiety than their control peers, as well as fewer attention problems than adolescents with normal performance. Although teacher assessments did not indicate significant differences between the groups, adolescents' self-reports corroborated the parents' assessment. The work of Eklund et al. (2015) also demonstrates, in parent and teacher assessments, greater emotional and behavioral risk in normally performing children. Furthermore, gifted students demonstrated higher academic performance, regardless of the level of risk, suggesting that higher cognitive abilities may constitute a protective factor in mitigating the development of other social, emotional, or behavioral concerns (Eklund et al., 2015). Still using parent and teacher reports as a reference, Wilson (2015) pointed out that the concentration of gifted children was positively related to empathy and negatively related to socially maladaptive behavior. Empathy and friendship were also negatively related to socially maladaptive behavior, according to parents and teachers.

Considering self-reports, the work of Eren et al. (2018) revealed that gifted children described themselves as more inattentive, with low social functioning, and with a worse perception of their physical health. In contrast, according to an assessment by Bracken and Brown (2006), gifted students achieved significantly better results in competence and executive function ($p < 0.05$ in both). Furthermore, gifted students scored lower on some scales, including anxiety, depression, and attention deficit. Still from a self-report perspective, students considered gifted, according to the criteria of the study by Plominski and Burns (2018), exhibited higher mean scores than those of students in the control group. Furthermore, students in the control group reported significantly lower levels of overall life satisfaction, personal satisfaction, and academic self-efficacy ($p = 0.01$ in all cases).

Discussion

After completing this review, the hypothesis of reviewing the giftedness model was considered, both in order to bring Renzulli and Gagné's models closer together and to define the conditions that may interfere with the manifestation of this condition. According to the Iceberg Model, presented in Figure 2, giftedness is characterized by four factors: above-average ability, task commitment, creativity and work capacity.

Figure 2
Representation of Iceberg Model



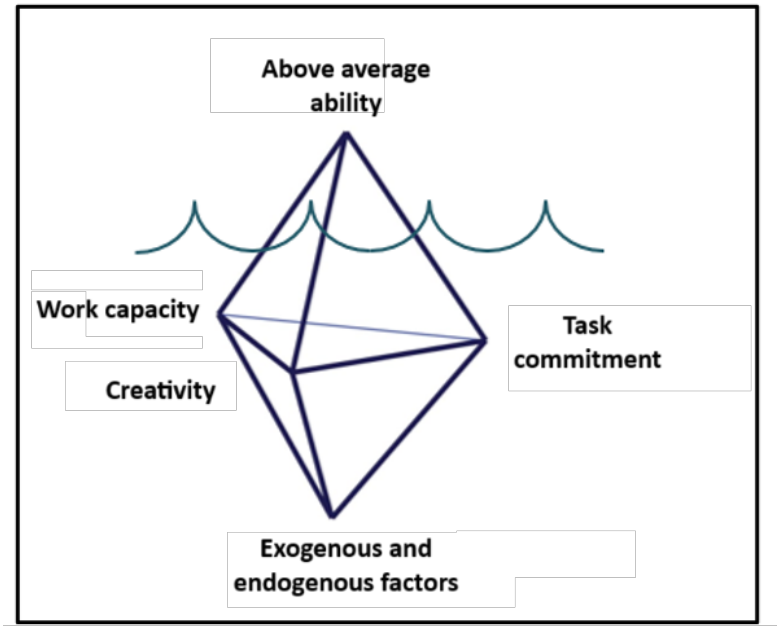
However, there is a fifth vertex in this figure that corresponds to exogenous and endogenous factors. Among the endogenous factors, one can consider depression and anxiety, for example, while social and gender issues can be exogenous factors. These factors will not characterize the gifted student. However, they can decisively influence its manifestation.

In this model, above-average ability constitutes the upper vertex of this figure, especially considering the psychometric tests adopted. The option to highlight above-average ability from the others is also justified because it is the factor least dependent on endogenous and exogenous factors. A distinction was also made between intellectual capacity and work capacity. This distinction is based on the idea that giftedness, according to Gagné's model (1985), can manifest itself as intellectual or sensorimotor. Work capacity, as well as task commitment and creativity are on the same level in the figure. To corroborate this idea, Sternberg's (1984) conception of intelligent behavior was revisited. One of the subtheories described by the author specifies three fundamental processes: (a) learning to do things, (b) planning what to do and how to do it, and (c) actually doing things.

At the opposite vertex to above-average ability, there are exogenous and endogenous factors. According to the Figure 3, these factors can be heavy enough to make the “iceberg” sink to the point of hiding the individual’s characteristics. It is being admitted that task commitment, creativity and work capacity can be “hidden” before above-average ability, however, it is not stated that these three are hidden in the same proportion.

Figure 3

Representation of the Model When Exogenous and Endogenous Factors Are Heavy Enough to Sink the Iceberg



Although the figure is a regular solid, it is not postulated that all characteristics manifest themselves in the same proportion or even under the same conditions. Creativity and task commitment, for example, can manifest themselves in a pronounced way in a stimulating and/or welcoming environment. So, even if factors are capable of sinking the iceberg, it's possible that some individual characteristics are masked and others are not. For example, it's possible that an endogenous factor like depression is significant enough to mask task commitment and creativity, but not sufficiently so for work capacity.

Conclusion

Although some papers dealt with two or more themes related to depression, the analysis of the predominant themes, from this perspective, offers a reasonable overview: the greatest number of occurrences are found among self-esteem, protective and/or risk factors and emotional adjustment. Qualitatively, some points of convergence were observed between some studies; however, completely divergent results were found on certain issues. Considering these results, we suggest that a future meta-analysis be conducted to measure the significance and effect size of each result. In any case, the construction of a new model was postulated that would expose the influence of endogenous and exogenous factors in the manifestation of giftedness.

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