

Effective interventions to improve domain-specific social, emotional, or academic outcomes for twice-exceptional individuals who are gifted with ADHD as a disability

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Abstract

The demand for effective interventions to improve domain-specific academic outcomes for individuals with special needs at either end of the spectrum has existed for some time. Since the earlier contributions to the literature documenting gifted individuals who were simultaneously exhibiting disabilities, there has been some progress in our understanding. We now know that in individuals with both gifts and disabilities, potentially, either or both of the exceptionalities can obscure the effects of the other, which significantly delays the average time to receive a diagnosis. Such delays in diagnosis detrimentally impact the quality of life across various domains because there can be no opportunity to receive help in the form of effective interventions without a diagnosis. The purpose of this paper is to determine whether effective interventions exist to improve domain-specific (i.e., social, emotional, or academic) outcomes for people with both gifts and disabilities. A query was performed using evidence databases TRIP and PDQ for “twice-exceptional,” “Giftedness,” “Disability,” and “intervention.” The four most relevant, freely available studies in English were selected for critique. Despite identifying potential threats to validity among the studies, methodological similarities among them were strong enough to confidently conclude that not only do effective interventions exist for the population of gifted with ADHD, but the outcomes of these interventions may also carry over into other domains resulting in indirect effects.

Keywords: domain specific, intervention, academic outcomes, giftedness, twice exceptional, social, emotional, academic, ADHD

Background

Attention to manifestations of both gifts and disability in one individual—referred to as twice exceptionality (2e)—began nearly 100 years ago in the early 20th century [1]. Since its beginnings, there have always been skeptics who refuse to acknowledge the simultaneous existence of gifts or talents with disabilities or deficits is possible despite published positions and the emerging literature. The most cogent arguments against twice-exceptionality (2e) relate to the absence of any universally accepted criteria comprising a consensus for an accepted definition. Nonetheless, although difficulty may exist in establishing consensus for a definition of twice-exceptionality (2e)—even by those who support it—confusion about how best to define something is not necessarily indicative of there being any confusion regarding that to which the definition is to refer.

Among the skeptics with regard to 2e, the issue is not epistemic; it is ontological. That is, even for skeptics, it is undisputed that individuals who are twice-exceptional are "both gifted and have a learning, emotional, behavioral, or social issue". For example, someone could be gifted with ADHD, in theory. Nevertheless, skeptics neither claim to know, believe, or acknowledge such a duality is even possible—let alone that people exist with it. It is known to professionals that work with people from this community that, for those who are considered 2e, the interaction and interdependence of both exceptionalities place these individuals at greater risk for developing personal, professional, or academic difficulties [2].

The reason for the greater risk associated with this 2e population is due to the tendency for gifts and disabilities to obscure, or compensate for, one another rendering the usual strategies employed in identification ineffective [2]. For instance, attempts to identify through testing for giftedness that comprises sections rely on working memory, but they actually have the effect of penalizing students whose disability—such as ADHD in which working memory deficits frequently occur—involves such deficits [3]. Thus, there needs to be some reliable and valid way to identify both exceptionalities when they coexist, which the construction of an adequate definition may help establish.

In an effort to clarify the concept, a twice-exceptional Community of Practice (2e CoP) convened to systematically develop a definition for adoption and widespread use. In light of characteristics and consequences of having both gifts and disabilities, the definition of twice-exceptionality ultimately drafted by the 2e CoP focused on aspects related to identification, enrichment, and the establishment of support systems [4]. The author views these focal aspects as a scaffold for a three-pronged approach that could effectively meet the unique needs of 2e individuals. Identification of both the people and their unique needs is critical if they are to receive strategies, techniques, or other interventions that are appropriate for their particular situation [5]. Timely identification and intervention can significantly improve the quality of life of those affected.

Methods

To research the topic, the tools used included evidence databases such as TRIP or PDQDB, in addition to UB libraries through remote web access. Of the available hits returned searching for "twice-exceptional," "2e," "Giftedness," "Disability," and "intervention," those selected for inclusion concerned effective interventions and primary research. In addition, inclusion was limited to four papers deemed relatively recent and relevant by the author to a range of aspects concerning both diagnosis and treatment that in the English language and were free to access and relatively recent in the literature. I have included the one-page review tables for each of the four papers selected that were completed and used for analysis [6–9].

Results and discussion

Upon evaluating the four studies, there were both methodological strengths and weaknesses discovered. These strengths and weaknesses

potentially limit the generalizability of the results or findings. The studies shared similarities, which were found to be in their strengths whereas were what discerned each from one another. Comparing and contrasting the studies resulted in the following patterns.

Similarities found among the methodological strengths of studies

Among the strengths shared by the studies, it was operationalizing high IQ, establishing a reasonable criterion, and the use of comparison groups in Antshel et al. that stood out [6]. The study by Antshel et al. [6] showed the strength that was consistent with Tao and Shi's [7] implementation of multiple verification processes in the study. Also, the use of a multidisciplinary team to diagnose participants in Pisacco et al. [8] aligned with the previous two studies. Consistent with the studies as mentioned above, Foley-Nicpon et al. decided to conduct their research during an established 2-week long summer program [9]. Their choice to evaluate participants before, at the end of, and three months after the intervention along with the use of validated instruments/measurement devices (i.e., PALS & FQS) helped to solidify the consistency found among the strengths through the use of independent measurements. By independent, it means that the observations and findings of the primary studies considered have occurred separated by either "occasion," "instrument," or "person" inclusively. Occasion conveys the temporal aspect of an observation in its referent encompassing "when" the observed events took place. Instrument refers to the "with what" and "how" the observation was made and recorded. Finally, person represents the individual by whom the observations and findings are made. As these are all dimensions or perspectives on observations that occur and are made during research, the consistency among the studies will allow for comparisons and contrasts to be made between them meaningfully.

Whether made between contemporary studies, or those of the past or future, successful comparisons and contrasts require some level of agreement between that which is compared. That is, to say, for useful comparison and contrast to occur, there needs to be a minimum level of consistency in the observation-event among the studies used. Moreover, the consistency among any studies to be compared and contrasted should exist between either the observers themselves (i.e., person), the circumstances under which observations occurred and were made (i.e., occasion), or the devices that were used to do so (i.e., instrument). In this respect, it may, therefore, be concluded that the similarity among the strengths of these studies relates to efforts that enhance "inter-observational agreement," which improves "reliability" and "accuracy" that is conducive to making research replicable [10]. It is because of such thematic consistency among the strengths the studies facilitating comparison and contrast according to person, occasion, or instrument as a lens through which to conduct an analysis to determine the extent to which there exists inter-observational agreement that I have confidence in the conclusions drawn to answer the present paper's research question.

Differences found in weakness due to threats and bias

Despite the studies sharing similarities regarding methodological strengths as noted, the same may not be said of their weaknesses. No research is conducted without the potential for undesirable threats. Threats introduce weaknesses in research efforts and come in many forms. The forms that are both pertinent and prominent in the studies analyzed in the present paper will be discussed in the following paragraphs.

Resentful demoralization of the control group is a threat that could weaken a study resulting in differences between groups. In this case, differences may be exaggerated due to a lack of effort on the part of the controls, which could have been the case in Tao and Shi especially if the students not chosen for enrichment programs found out somehow [7]. Also, history may interfere and result in differences found due to some other variable between measurements to which participants exposed.

Another troubling threat or potential bias concerning Tao and Shi's [7] is the manner in which the sample for enrichment was picked as

well as the different initial and final tests differing. Such differential selection in assignment or testing of groups could have occurred. The basis for claiming the potential for it to occur is due to admitted failure to consider attending in the sample selection and testing processes. Furthermore, a threat to external validity, or the ability or extent to which the results may be generalized to the population, was likely an issue in Tao and Shi7. The author contends that the lack of consideration to attention in the sample creates a question in research consumers' minds as to whether all gifted children in enriched programs could benefit.

Because attention was overlooked, failure to view it as that which possibly allowed for the gains from the gifted enrichment program precluded the researchers from considering a very plausible explanation for the findings. Although having proper attention may not be sufficient by itself for gifted students to reap the rewards from enrichment programs, it may be necessary to have. In the case of findings obtained if one were to conduct a thought experiment in which there were students in the enrichment program who were gifted yet found not to possess great attention skills, for example, gifted students with ADHD, they would be considered twice-exceptional or 2e. If 2e students were chosen for enrichment, then a dramatic and significant reduction in the number of student gains from the program could be observed if any gains occurred at all.

Differences in the combined experimental group could be explained by many things including participants' attention, interest, etc., which threatens external validity or population validity. Besides, Foley-Nicpon et al. summer program's youth attendance could have been due to differences in students' interest in and suggesting themselves to go in the first place. That is to say; there may have been an intrinsic "motivational" factor that could explain the findings (i.e., intervention worked for gifted student attendees because they were interested and motivated to participate in the summer program). Thus, the motivation or interest could be necessary for the benefits from the intervention to be effective. In this respect, an interaction of personological variables with the intervention was responsible [10].

Ecological verification of the independent variable refers to the extent to which implementations of the independent variable can be reproduced precisely in the real world¹⁰. An example of this type of threat affecting the studies in the paper would be the Hawthorne effect if the interventions involved increased attention paid to participants (and most likely would). It would be difficult to determine whether the added attention or the intervention delivered was responsible for the observed results. Furthermore, without much attention being paid to them in the outside world, the results would not be obtained or reproducible.

Multiple treatments may have also threatened the dependent measures because participants were exposed to additional variables in the case of the gifted students who took part in the 2-week summer program. Novelty and disruption effects may also have posed a threat. For instance, if it were determined that, in Foley-Nicpon et al., the attention given to students was required to benefit from the intervention of video modeling, then the conditions of the experiment acted like an independent variable that influenced the effects being observed. In the case of the 2-week summer program, such novelty and disruption from receiving the additional attention is what would contribute to the Hawthorne effect [10].

Ultimately, threats from the most basic aspects of research such as the evaluators conducting the experiment, the amount of time considered between pre-and postinterventional measurements, and the measurement of the dependent variable chosen all could have influenced the findings of the studies or limited their generalizability. For instance, in Foley-Nicpon et al., instead of looking at the quality of friendships, what if researchers measured the number of friendships made, the number of friendships maintained, or the stress associated with maintaining and making friends? It is possible the intervention might not be deemed effective considering these as dependent measures.

Conclusion

The similarities found among the strengths of the studies, as opposed to their weaknesses, is what allowed for confidence to be had in the results on which the answer to the research question is based. In response to the primary research question, for gifted individuals with ADHD or disability referred to as "twice-exceptional" or "2e", the answer is yes, effective interventions and strategies do exist that can improve domain-specific (i.e., social, emotional, professional, or academic) outcomes. Moreover, based on the evidence, it may also be concluded that not only do directly effective interventions or strategies that can improve specific domains exist, but the effects of a domain-specific intervention can carry over into other domains thereby resulting in indirect effects.

We can conclude that attention deficit hyperactivity disorder is a valid diagnosis in the presence of high IQ [6]. Furthermore, Tao and Shi7 showed that intellectually gifted children who receive enriched education as an intervention had greater improvements on attentional performance than did intellectually gifted children who received the standard education alone. In particular, the main effect of the enrichment was in accuracy associated with sustained attention tasks. Additionally, metacognitive interventions in the form of self-regulation strategies involving working memory are also effective [8]. Both interventions improved behavior and school performance, but only the combined working memory with specific text production intervention increased the overall quality of narrative text, the organization of paragraphs, and the denouement. Improvement in the quality of friendships results from social skills interventions for gifted who have difficulty with social situations (Foley-Nicpon et al., 2018). For these reasons, we may conclude that interventions do exist that can improve the lives of 2e individuals who are gifted with ADHD in social, emotional, and academic domains.

Taking the opportunity to explain a potential reason for the combined intervention result from Pisacco et al., the results from the Pisacco study suggest that metacognitive interventions contributed to improving behavior and school performance, whereas only the combined intervention increased the overall quality of narrative text, organization of paragraphs, and the denouement [8].

The combined intervention comprised training in Working Memory (WM) with text training. WM is defined as the part of short-term memory concerned with immediate conscious and perceptual linguistic processing (OUP, 2020). The overall narrative quality is a function of the organization or structural design and the denouement. Given the improvement made in the text's overall narrative quality, the interactive effects must have affected the participants mental organizational ability to allow for it to occur. In addition, succeeding in bringing together the components of the narrative means the denouement must be a function of the mental ability to organize. In this fashion, the interactive effects may be understood as a function of a function. the coordination and *control* involved in the organization and structure required to bring closure in the denouement of the text leading to the improvement in narrative quality overall implicates an organized procedural approach with step-by-step ordering ability. The metacognitive essence encompassing the organizational ability, control, and effort necessary for the overall improvement in the quality of the text narrative that occurred is reminiscent of a construct called executive function.

Executive functioning (EF) is comprised of several directed activities that guide goal-oriented actions in the behavior of humans. According to LDONLINE.ORG, the executive functions all serve a "command and control" function; they can be viewed as the "conductor" of all cognitive skills. Any imaginable task—be it leisure or otherwise—is performed with EF at the helm, which includes vacation planning, conducting a research experiment, or writing an academic paper for a publication. The

As a set of neurologically-based processes of mental control that pertain to self-regulatory behaviors in which one engages toward some particular end, EF comprises several dimensions. In particular, studies reveal that the following dimensions comprise EF: working memory, inhibition, and cognitive flexibility [11]. Cognitive flexibility refers to the task shifting/switching (physical) or cognitive switching

(mental) that occurs in transitioning from one to the other. EF is what keeps us safe through vigilance if functioning properly. Nevertheless, when issues exist concerning any aspect of EF, they lead to difficulty with mental strategies involved in memorization and retrieval of information from storage [12].

The study's authors define "Working Memory" in Pisacco (2017) as "a temporary attention regulated storage system that sustains our capacity for complex thought, such as language, planning, and problem-solving." An intervention that improves WM was successful because it did one of the following: increased attention, ability to regulate, enhanced the storage system, improved sustainment, prepared one for complex thought, heightened language ability, refined planning skill, or enhanced problem-solving ability. Because WM is a dimension of EF, if WM improves then so does EF as a whole. Thus, it is through EF improvements from WM training with text production that the combined intervention can explicate the overall improvement to the text narrative.

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