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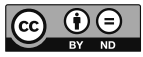

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How Do You Picture a Genius? Children's Images of Outstanding People

Abstract

The aim of the research is to investigate children's ideas about outstanding people (geniuses). Three research questions were posed to 38 children aged 8–9 years: How do children imagine a genius? What gender do they identify with a genius? and What are the emotions of the genius they imagine? The research used the projection method, in which the children were asked to draw a genius and to add a description to the drawing. Qualitative analysis was conducted on the results; the codes and categories appearing in the drawings and descriptions were identified.

The research showed that children envision geniuses as both men and women (women although less frequently); in one case, it was said that a genius is everyone. Most often they were seen as scientists, but athletes, historical figures, characters from fairy tale or advertisements, or ordinary real people were described as well. The characters drawn by the children were mostly positive: attractive, elegant, and active. Only a few features testified to negative emotions accompanying the idea of a genius: being ridiculed, helpless, or disliked. The children's conceptions of geniuses indicated that

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they are people (not traits) who stand out from others with their actions, appearance, and achievements and are more likely to be a man. These findings require further investigation, particularly in the context of creating labels and stereotypes about above-average people and the outstanding capabilities of women and men.

Keywords: childhood imagination, genius, outstanding people, projection method

Introduction
The meaning of the word *genius*

The concept of genius is rooted in antiquity. It signified the guardian deity of a person or a place; in late antiquity, there was a distinction between a good genius (or white, *genius albus*) and an evil genius (or black, *genius ater*). Over the centuries, this concept took on a new dimension: In the 18th century, it signified an innate ability to produce wonderful works, obtained without learning or knowledge of crafts (Kopaliński, 1985; Szenajch, 2013). In the 19th century, Cesare Lambroso (2015) searched for analogies between genius and insanity, analyzing the importance of race and heredity. In turn, Francis Galton recognized that genius denotes outstanding abilities that largely depend on an inherited sensitivity and energy (Limont, 2010).

Nowadays, *genius* means both a person and outstanding abilities (Dictionary of the Polish language n. d.). It is a blurred concept that refers to people with outstanding abilities and creativity. Such people are unique and the effects of their activities are revolutionary (Limont, 2010). They are highly productive, original, and creative in a given field (Simonton, 2010). Genius combines a high level of intelligence with originality, while creativity is essential in the achievements of geniuses (Eynseck, 1995). Genius is judged according to cultural norms, which change. The actions, works, and achievements of outstanding people are judged by mediocre people, while perhaps those who can appropriately make such judgments should also be considered geniuses (Robertson, 2008).

Dean K. Simonton (2010) points out that genius manifests itself in artistry, creativity with a capital "C," leadership (religious, military, political, or entrepreneurial), and proficiency in certain fields, such as chess or sports. This concept is used in many contexts, including dramatic genius (outstanding playwrights), military, political, and economic genius (rulers and leaders), human genius (masterpieces), or musical genius (outstanding composers). Genius may include all spheres of human activity (Szenajch, 2013). Thus, it becomes a term with ambiguous connotations: The genius of evil defines totalitarian leaders, "the backwards genius" describes someone who has done something so bad that it is good (as the director Ed Wood was called), and "genius as if" is a person who imitates others wonderfully. Moreover, genius has also been transferred to the world of technology – computer genius refers to artificial intelligence (Simonton, 2010) – and to the world of plants and animals (there are publications whose titles contain such terms as plant genius, animal genius, canine genius, etc.).

The far-reaching democratization of the concept of genius has brought it to the world of pop culture, meaning something which someone is good at. The concept has been simplified and become synonymous with the result of practice; thus, there are guides with tips on how to become a genius or how to educate a child to make them brilliant. There are also several products on the market that bear this term. These are dietary supplements, games, diet and mind guides, toy kits, and more – all of which, can turn someone who uses them into a genius. According to Piotr Szenajch (2013), in colloquial, school, and even scientific contexts, genius has become something that can change through effort – as opposed to features that cannot be changed and are "dependent on biological or supernatural factors" (p. 29).

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Imagination and its development in children

Imagination[1] is the mind's ability to generate mental images[2] of reality that resemble perceptions and appear in the absence of their real counterparts received by one's senses (Maruszewski 2001; Nęcka et al., 2008). Many scientific disciplines deal with various aspects of imagination (including psychology, pedagogy, philosophy, sociology, biology, and neurophysiology), but they always emphasize its constructive nature in human life (Górniewicz, 1995).

Traditionally, reproductive and creative imagination is distinguished in the psychological and pedagogical literature. The reproductive imagination is associated with recalling from memory and is responsible for creating previously perceived objects (reconstruction of memory traces), while the creative imagination – related to thinking, intelligence, and emotional processes – is understood as the ability to create in the mind completely new images, objects which have never been seen or events based on past observations which have been significantly modified (cf. Górniewicz, 1989; Limont, 1996; Nęcka et al., 2008; Jankowska, 2018).

Both genes and the environment influence the development of the imagination. Many factors can shape it (accelerate or inhibit it): memory, concentration, perceptiveness, thinking, and manual and linguistic skills. The child's own cognitive activity is important, where temperament plays a major role. Other factors include the child's physical activity, moral and social maturity (especially interpersonal communication skills), moral and social development. It is also worth mentioning the attitude of their social environment toward their creative activities (Górniewicz, 1991; Guzy, 2019). It is worth pointing out that analyses of the biographies of eminent authors show that those who were isolated from the influence of school and peers during childhood had highly developed imaginative (visual-spatial) abilities (Limont, 1996). A child's imagination functions differently than an

[1] In psychology, it is also referred to as operational notions – visualization and internal imaging (Sztuka, 2010) – but also as fantasy or imagination (Limont, 1996).

[2] Also referred to as visualizations, internal images, mental images (Sztuka, 2010), mental representations (Nęcka et al., 2008), or mind images (Górniewicz, 1991).

adult's because of their different life experiences. It is believed that a child's imagination is richer than that of an adult. Childhood is the time when fantasy is most developed; with development, imagination and the power of fantasy wane (Vygotsky, 2004).

Józef Górniewicz, the pioneer of pedagogical analysis of imagination in Poland, distinguished the developmental stages of children's imagination, emphasizing that this development is abrupt – periods of marked acceleration are followed by periods of stagnation or even withdrawal – and that the stated age limits are arbitrary because each child's imagination develops individually. The first stage is between the ages of 1 and 3 years, when the imagination is reproductive and imitative. The second stage, between the ages of 3 and 6, sees the development of the creative and spontaneous imagination. In the third stage (6–9 years old), the imagination coexists with elements of rationality – spontaneity, creativity, and logical elements coexist with each other – while in the fourth stage (9–12 years old), rational superiority over the freedom of imagination is noticeable. The second period is considered to be the greatest bloom of children's imagination, dominated by spontaneity, freedom, and productivity of new images as well as the expressive way of exploring the world. At that time, a sharp increase in the imagination's productivity is also observed: The images are new, original, and numerous and the fictional world that children create is closed to others and impossible to observe from the outside (Górniewicz, 1991). This is confirmed by research from Dorota Maria Jankowska on the development of creative imagination in childhood, which indicates a lack of linearity and a particularly progressive period from the ages of 4 to 7 years, while its pace and dynamics during preschool education are significantly higher than at the start of elementary education (Jankowska, 2019).

The research on children's imagination to date has concerned creative imagination (Limont, 1994, 1996; Jankowska, 2019; Pędzich & Łukasiewicz-Wieleba, 2020), images of people, concepts, objects, and landscapes (Cin, 2004; Niesporek-Szamburska, 2013; Schubert, 2014; Guzy, 2019; Jelinek, 2020; Trahorsch & Trhlíková, 2021), and perceptions and attitudes toward national minorities (Weigl, 1999; Łukaszewski, 2006) and toward the school environment (Jovchelovitch et al., 2017).

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The method

The present study is in line with the research tradition known as grounded theory (Glaser & Strauss, 2009; Silverman, 2009; Glinka & Czakon, 2021) and is intended to develop new knowledge regarding children's conceptions of outstanding people. Three research questions were formulated: How do children imagine a genius? What gender do they identify with a genius? What are the emotions of the genius they imagine?

The projection method was used. The participants were asked to make a drawing and to briefly describe it according to the following instructions:

> "How do you picture a genius? Who is he or she? What does he or she look like? What characterizes him or her? Make a drawing of a genius. Try to make your drawing represent your ideas, not your friend's. After completing the drawing, explain why you think this is what a genius looks like."

This method was chosen because children transform their experiences mainly through drawing and drawing becomes a form of communication for them (Tyszkowa, 1993). At the same time, children's drawings provide plenty of information about their experiences and the projection drawing method can be used as a "tool to learn about a child's emotions" (Braun-Gałkowska, 2016, p. 47), within which drawing is a "projection of seeing oneself and others" (p. 62).

The research was qualitative. The visual materials and descriptions obtained from children were analyzed in terms of the codes that appear in them, which were then grouped into categories describing the concept of genius.

Pilot studies were carried out in two classes of elementary school students. In total, 38 children (20 girls and 18 boys) aged 8 to 9 years participated in the study. In line with the principles of ethical scientific research, written consent was obtained from the children's parents. The study was conducted by teachers in order to provide the participants with optimal working conditions.

The results

In the process of analysis, the following categories concerning the concept of genius were identified: gender, identification with a character (historical or living), identification with a pop-culture character (from fairy tales, cartoons, games, toys, etc.), appearance, accessories, surroundings, and description.

1. The gender of a genius

The Polish word for *genius* functions in the masculine form. Most of the children (n=26) indicated that a genius is male (Figure 1). These children most often identified a genius with a scientist (n=10), characters from fairy tales, games, movies, or commercials (n=4), or ordinary men equipped with an attribute, such as a beard, glasses, or formal clothes (n=3). The respondents also indicated specific activities of a genius: making laptops, climbing heights, or being a racing champion or general (n=4).

Figure 1. Male representations of a genius

Eleven children identified geniuses with women (Figure 2). Two of them captioned their drawings with female generic varieties: she-genius

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or she-scientist; the others used the masculine terms for genius or scientist. As in the case of male geniuses, the characters depicted were scientists (n=4), ordinary women (n=4), or fairy-tale or historical characters (n=1 each). One child indicated electronics as the field of a female genius's skill. In one case, the child indicated that everyone is a genius, drawing a class with a teacher and students instead of identifying it with any gender.

Figure 2. Female representations of a genius

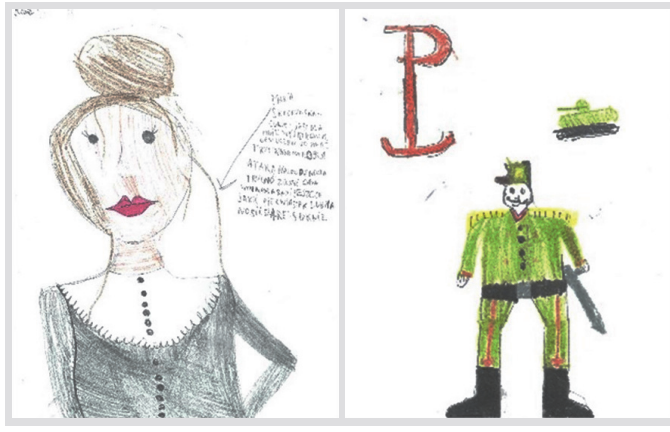
2. Geniuses as historical figures

Relatively rarely, a genius was identified with a specific historical figure. Two children drew and named historical figures: Maria Skłodowska-Curie[3] and Józef Piłsudski.[4]

[3] Maria Skłodowska-Curie (1867–1934) was a Polish chemist and physicist, the co-founder of the science of radioactivity, the author of pioneering works in nuclear physics and chemistry, and two-time winner of the Nobel Prize.

[4] Józef Piłsudski (1867–1935) was a politician, statesman, and Marshal of Poland.

Figure 3. Geniuses as historical figures: Maria Skłodowska-Curie and Józef Piłsudski



3. Geniuses as pop-culture characters

Among the characters produced by popular culture, the children indicated figures from Lego Ninjago blocks (n=2) and Axlotl (a Minecraft character), Iron Man (a character from comic books and movies), a doctor from an advertisement, and Hermione (a Harry Potter character) (n=1 each).

Figure 4. Genius as a product of popular culture, depicting Hermione, Iron Man, and Scott (a character from Lego Ninjago)

4. The appearance of a genius

Men were most often presented as people wearing glasses (n=11) or a lab coat (n=7) or with a beard (n=6). In individual cases, the genius was dressed in a uniform, formal clothing, or clothes with many pockets, pins, labels, etc. The geniuses' hair was often wind-blown (n=7) and their pockets often had tools protruding from them (n=6). In four cases, the characters had a disproportionately large head; one of these had a visible brain. Four times the figure was drawn as a cartoon. Examples of the characters are presented in Figure 5.

Figure 5. The appearance of a male genius

Female geniuses were usually dressed like scientists, in a lab coat (n=3), in traditional clothing (blouses and long skirts; n=3), or in old-fashioned clothing (n=1). The women in the pictures looked well-groomed: with long hair, loose or tied up (n=7), and carefully made up (n=4). Six of the women had glasses (or a monocle). Examples of the children's ideas are presented in Figure 6.

Figure 6. The appearance of a female genius

5. The surroundings of a genius

The characters were often drawn in portrait form, with no clear environment (n=15), in a laboratory (n=9), in a home (in a living room or kitchen; n=2), in a classroom or at school (n=2), or outdoors – on a training ground (n=2) or in nature (n=1). In individual cases, the characters were situated in a library or reading room, a race track, a world from a novel (Harry Potter), the sky (blue background with clouds), a laptop factory, or abstract elements in the surroundings. Figure 7 presents some examples that illustrate the surroundings of a genius.

Figure 7. The surroundings of a genius – in nature, a reading room, a laboratory, or a laptop factory, and a as portrait

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6. Accessories and attributes

Surrounding the geniuses are various accessories, such as tables/desks (often packed with chemical accessories; n=11), test tubes (n=7), explosions (n=7), chairs (n=6), clouds/speech bubbles (with question marks, dialogue, or comments; n=5), lamps (often overhead, with very bright light; n=5), numbers (n=4), a clock on the wall (with clues; n=4), a blackboard in a classroom (n=3), desks in a classroom (n=2), kitchen or other equipment (n=2), weapons (a pistol or rifle; n=2), and the symbol of the underground Polish state (n=2). Individual works contained a dinosaur in an egg, a boat, cars, a tank, a podium, computers, a moon, a door, a window, flowers in a vase, a TV set, clothes on hangers, sheet music, a musical instrument, a cauldron over a fire, stars, a light bulb, patterns, abstract elements, magnifying lens , and books.

7. Descriptions of a genius

When describing a male genius, the children focused on skills/traits, appearance, achievements, potentially negative traits, and other words. They most often used the term genius, in two cases scientist, and in a single case each: nerd, general, mad scientist, and professor. Among the skills or qualities of a genius, the children mentioned the following: smart, likes to read and learn, counts well, writes well, has good eyesight, likes potions, likes explosions, agile, is knowledgeable, makes laptops, and discovered a new species of dinosaur. Six children indicated a genius's achievements: made super armor, was a racing champion, was an explorer, freed Poland from captivity, made an invisible base, and climbs great heights.

Seven children drew attention to the appearance of a male genius in their descriptions, saying that he wears glasses and a lab coat, has a (brown) beard, has a certain expression, is similar to a scientist, is well-dressed, has a blue coat and blue eyes, or carries a magnifying glass. Two children pointed to negative aspects. One noted that he has no family or that his family is far away and he does not have time to take care of himself; another mentioned that he has vision problems. These are descriptions saturated with a negative emotional charge.

In turn, when describing female geniuses, they most often used the term genius (n=7); in individual cases, the terms scientist, female genius, she-scientist, nerd, and friend were used. Two children indicated the qualities of a genius, such as nice, friendly, wise, likeable, and genius. The third category of description was the type of activities: The woman has a lot on her mind, is always doing something, invents different things, likes to help others, likes to work with electronics, has cool ideas, has a solution for every worry, learns a lot, and invented radium and was awarded a Nobel Prize. Seven people used these categories of description.

8. Other conceptions of a genius

Some other images of a genius (Figure 8) depicted imaginary characters: with a huge head filled with cerebral ganglia or as a stereotypical "mad scientist" (n=3). One of the children identified a genius as a nerd who is disliked and ridiculed by others, a momma's boy who cares about good grades. Also, one child said that everyone is a genius, illustrating his statement with an active school class solving a math problem with the teacher.

Figure 8. Other conceptions of a genius: everyone is a genius, an imaginary figure with a visible brain, and a genius-nerd

Discussion

The research showed a great variety of ideas about the concept of a genius. The children's drawings showed both men and women, real and fictional people, and described them positively and negatively. There were figures representing various fields – primarily science, but also leadership, sports, and military. A genius is therefore a person who stands out from others with their features, behavior, and appearance.

For the first question, "How do children imagine a genius?" there was a great variety in terms of appearance, surroundings, accessories, and descriptions. There were elements among them that symbolized scientific interests, as well as ones unrelated to science (e.g., weapons, a clock, or classroom equipment). It is evident that children try to "tame" the concept of a genius by surrounding them with elements that are known and dear to them.

Children gain a lot of information through the media (Niesporek-Szamburska, 2013), and the figure of geniuses also appears in mass culture. For example, an analysis of Western films found that they contain the message that high intelligence and genius belong to men. This is also reflected in films aimed at children (Galvez et al., 2019), which in turn also translate into children's artwork, in which genius is identified with characters from fairy tales, movies, books, and games.

The research has shown that in the children's drawings and descriptions, the predominant identification of the notion of genius with a man is associated with skills and achievements. Many attributes related to the world of science were featured along with them, which proves the indirect relationship between a genius and a high level of intellect. In turn, women were described by their activities and features; attributes that testify to wisdom appeared less often than in the drawings of male geniuses and the women were more often associated with elegance, beauty, and warmth. This coincides with the findings that genius – a high level of the abilities necessary for scientific achievement – is stereotypically the domain of men, and empathy that of women (Storage et al., 2020).

Children are susceptible to information that they draw from their social environment: family, kindergarten/school, and the media. They try to critically process this content (Niesporek-Szamburska, 2013). From an early age, through the family and cultural transmission of the society in which they were born, they learn to identify the characteristics of a given gender. Initially, these stereotypes relate to toys or colors (Serbin et al., 2001). However, over the years, children also establish attitudes toward traits such as status and abilities. The stereotype that associates gender with genius appears in children as early as the age of 5–6 years; in one study, children more often indicated that genius is a feature of (white) men (Bian et al., 2017), while older students used the term "brilliant" more often for men than for women (Storage et al., 2020). This also applies to peers: When indicating people who are wise, children chose their own gender first, which is developmentally conditioned, and then boys (Bian et al., 2018a).

Another study on students found that they described their male lecturers as a genius 2–3 times more often than women in fields that require a high level of intelligence (Storage et al., 2016). This tendency also continues among adults: a high level of intellectual abilities (brilliance) is more often ascribed to men, which discourages the efforts of women striving to pursue careers in given fields. Thus, although there is a belief that men and women are equally intelligent, it is also recognized that men are more likely to be brilliant (Bian et al., 2017). Because children learn from adults, they accept what adults say as the truth and imitate them (Niesporek-Szamburska, 2013).

However, another reason that children more often portray geniuses as men may be because of language. In Polish, personal names are mainly differentiated into masculine and feminine forms (Latos, 2020). However, a large proportion of nouns function in the linguistic space in the masculine form. This applies primarily to the names of professions (e.g., lawyer or driver), public functions (e.g., prime minister or president), scientific titles (e.g., professor or M.A.), or military personnel (e.g., general or officer) – in particular those which enjoy social prestige and are traditionally equated with the male domain. These include the terms genius or scientist.

As Agnieszka Latos (2020) notes, this linguistic reality was shaped by a non-linguistic reality in which "the asymmetry of the social, professional, and public position of a woman in relation to that of a man has long dominated. This asymmetry is only being eliminated in modern times by gradual social changes of an equal nature" (pp. 231–232), which in the linguistic space translates into a clear tendency to create and use feminine forms.

With regard to which emotions accompany children in their perceptions of extraordinary people, it was established that positive feelings prevailed. Such labels as "gifted" or "talented" distinguish an individual from their peers (Łukasiewicz-Wieleba, 2018). Also, the term "nerd," meaning a student who achieves a lot in school, is a way of distinguishing an individual and their academic achievement from a group. In two cases among the participants of this study, a genius was identified as a nerd, which has both positive and a negative connotations. Although the characters most often drawn by the children were portrayed positively, in several cases the children showed the downsides of being a genius, including neglect, ridicule, and a lack of sympathy from other people. More often, male geniuses were marked by negative emotions. This shows the potential dangers of the stereotypical labels that are attributed to outstanding individuals.

Children build theories based on intuition and imagine characters and the world, trying to understand it better. Even young children develop a stereotypical image of the world; the information they acquire is potentially unfavorable for some of them, in particular those that link achievements with belonging to a social category (e.g., related to gender) (Cimpian et al., 2012). Stereotypes are inflexible and resistant to changes, but also have meaning in the face of specific situations: they trigger actions and emotions (Niesporek-Szamburska, 2013). This is important in the context of Carol Dweck's research (2021), which notes that the mindset that one has a natural and unchanging talent is related to the level of achievement of young people. Children who were told that success in a given field is associated with a specific group (e.g., gender) were less persistent in their pursuit of success (Cimpian et al., 2012),

recognizing that they have no influence on it. The earlier that children associated a genius with a man, the sooner intelligent girls withdrew from areas where intellect is necessary (Storage et al., 2020). Girls at the age of 6–7 years less often than boys chose activities that were described as requiring a high level of intelligence, but the gap narrowed when it came to activities suitable for those who try harder (Bian et al., 2017). Consequently, in adulthood, women were reluctant to pursue careers in those areas where a high level of intellectual abilities is a key condition for success, while for men this criterion was irrelevant . When deciding which career to pursue in their lives, they chose one that is culturally suited to women, rather than one that requires the brilliance of men. To exclude a possible future mismatch with their chosen profession and a potential lack of success, women give up on certain careers when deciding on their life path (Bian et al., 2018b).

In conclusion, a genius as conceived by the children in this study was a person (not a trait) who stands out from other people through their actions, appearance, and achievements; they were more often a man than a woman and were mostly marked by positive emotions. However, the research covered a relatively small group of children, so this issue requires further study, among older children as well.

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