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The Backstage of Twice-Exceptionality: A Systematic Review of the Movies

Furkan Atmaca , Osman Yağbasanlar , Erol Yıldız , Ahmet Göncü , and Mustafa Baloğlu 

ABSTRACT

Twice-exceptional individuals (2e) are highly gifted/talented or creative but have a disability in at least in one developmental area. In order to reveal more about the condition we systematically reviewed movies that depict 2e individuals to reveal how they are portrayed. Eight movies were analyzed in depth. The selected movies were independently watched and encoded. As a result, a total of 54 codes were generated, which were combined under six themes, most themes having two categories (i.e., positive versus negative or strengths versus weaknesses). Despite being perceived more positively on the cognitive themes, they are portrayed mostly negatively on the socioemotional and behavioral themes. The movies conveyed significant messages about the educational lives and familial difficulties of these individuals.

KEYWORDS

disability; dual-exceptional; gifted; movie review; talented; twice-exceptionality

Some individuals may differ from their peers at a “significant” level and need special attention. Giftedness comorbid with any type of disability is referred to as twice-exceptionality. People who are gifted but also have a disability are referred to as twice-exceptional individuals (2e). Twice-exceptionality is defined as:

Demonstrate[ing] the potential for high achievement or creative productivity in one or more domains such as math, science, technology, social arts, visual, spatial, or performing arts or other areas of human productivity AND manifest[ing] one or more disabilities as defined by federal or state eligibility criteria . . . (Reis et al., 2014, p. 222)

Exceptional ability and various types of disability may be present together in many different combinations. However, the most common disabilities among 2e are autism spectrum disorder (ASD), specific learning difficulties (SLD), and attention deficit disorder (ADD) with or without hyperactivity (HD) (Montgomery, 2015; Reis et al., 2014). On one side of the coin, superiority is perceived as the transformation of innate cognitive capacity and/or talent into exceptional performance within value norms of the society (McClain & Pfeiffer, 2012). The concept is considered to encompass creativity, task commitment, specific academic aptitude, productive thinking, leadership, visual and performing arts, and/or psychomotor skills in addition to general cognitive ability (Marland, 1971; McClain & Pfeiffer, 2012; Renzulli, 2016). On the other side, disability is more intricate and complicated. For example, the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) of

the American Psychiatric Association (American Psychiatric Association, 2013) covers hundreds of neurocognitive, psychotic, neurodevelopmental, emotional, and behavioral disability types that appear under 22 headings. Therefore, twice-exceptionality refers to a multifarious diagnosis. Additionally, the higher cognitive abilities of 2e individuals may mask their disability(ies) or vice versa (Montgomery, 2015).

SLD is traditionally characterized with average or above average cognitive skills but greater deficiencies in academic areas such as reading, writing, and arithmetic (American Psychiatric Association, 2013). There are three common types of SLD: Dyslexia, dysgraphia, and dyscalculia. People with SLD can have strong critical and creative thinking skills and in-depth knowledge in special areas; however, they may quickly be disrupted, have difficulty in following instructions, organizing thoughts, and interpreting social context and nonverbal cues (Reis et al., 2014); and thus, are prone to difficulties in academic subjects.

ASD has two main diagnostic criteria: (a) delays in social development and communication difficulties, and (b) unusually strong, narrow interests, and repetitive behavior patterns (American Psychiatric Association, 2013). These individuals display difficulties in initiating and maintaining social interactions, establishing eye contact, and supporting communication with facial expressions. The theory of mind (ToM) asserts that individuals with ASD fall short in a series of skills such as comprehending other people’s thoughts, beliefs, desires, or intentions as well as interpreting their behavior and predicting what they will do (Attwood, 2006;

Baron-Cohen, 2005). Some people with ASD may become overly concentrated in one or a few areas of interest (known as weak central coherence; Vanegas & Davidson, 2015). Other individuals with ASD focus on figuring out the dynamics and functioning of a phenomenon (known as systemization; Baron-Cohen, 2009).

Attention Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by symptoms of inattention, hyperactivity, and impulsive behavior (American Psychiatric Association, 2013). These individuals have difficulty following and completing instructions, attending to and understanding social context, remaining seated, or waiting their turn in conversation; but, they may have higher critical and creative thinking skills and they usually prefer spatial tasks, attempt dangerous physical activities, and disturb and interfere with others (Reis et al., 2014).

Historically, the value of using written material in support of social and emotional development has long been recognized (Lenkowsky, 1987). However, videotherapy proponents claim that visual material can also be used for the same purpose (Milne & Reis, 2000). In general, movies are assumed to be powerful tools in contemporary societies and an important part of youth in particular. The strength of movies to affect the emotional lives of many viewers has been recognized through experimental studies (Hébert & Neumeister, 2001). Additionally, movies can provide an opportunity for viewers to create meaningful metaphors reflecting the core of the dilemma that 2e individuals experience and inspire people to view the situation from a different perspective (Hébert & Neumeister, 2001).

We didn't find any research that focused specifically on 2e in movies. However, there are studies that examined movies of the gifted or disabled characters. In this context, Hébert and Neumeister (2001) recommend guided-viewing as a counseling strategy that can help middle and high school counselors and teachers gain useful information to cope with the problems faced by gifted students. They offer a theoretical basis for this approach, various implementation strategies, and three sample plans for guided-viewing sessions in their work. Hébert and Hammond (2006) included an exemplary lesson plan to support teachers and counselors who would implement guided-viewing and presented a bibliography of movies that could be watched with gifted students. Cox (2000), on the other hand, provided a brief overview of how to cope with "the biased influence of" extraordinary roles and stereotypes seen in movies about gifted children. Topal and Tortop reviewed *Vitus* (Topal & Tortop, 2015) and *Little Man Tate* (Topal & Tortop, 2016) for a better

understanding of giftedness and the importance of gifted children's education. Şentürk (2018) aimed to reveal the typical characteristics of the gifted characters in *Little Man Tate* and *Gifted* and to critically discuss the portraits of giftedness in these movies. Afat et al. (2020) evaluated the movie *Gifted* in terms of its value as an educational material in raising social awareness in the professional development of educators who will work with gifted individuals. Similarly, Karacan Özdemir (2018) examined *October Sky* in terms of career development characteristics and difficulties experienced by the gifted. Finally, Girgin (2017) prepared a list of 200 movies among which appropriate ones are to be selected based on their concentration (e.g., values education, critical pedagogy, special education, etc.).

Although the aforementioned studies focused on the use of movies with certain special groups, we found none that examined 2e. Characters with special talents and needs have played many roles in the modern and popular cinema; however, they are typically presented one-dimensionally (Cox, 2000). Revealing how the media portrays 2e will help increase the awareness of stakeholders' such as teachers, parents, and other caretakers. Thus, such a review will be a resource for teachers and adults. The subject is also important in portraying the characters more accurately, based on scientifically backed information and removed from clichés in future movie scenarios. Identifying movies showing how 2e are depicted is important for providing educational material that can be used in primary, secondary, or higher education.

This study aimed to critically examine the movies about 2e by using the systematic review method. In this way the review addressed mainly the following question: How are 2e portrayed and characterized in movies?

Method

The research aimed to systematically review the movies in which the main characters are 2e by using qualitative document analysis, which is a process of choosing and analyzing textual and/or visual documents (Guest et al., 2013). In this context, the Internet Movie Database (IMDB) was screened in February 2021, using the keywords *gifted child*, *talented child*, *prodigy*, *genius*, and *brilliant mind*. A total of 336 movies were identified as a result, and the storylines of these movies were examined within the scope of the inclusion and exclusion criteria. Inclusion criteria were (a) having a gifted/talented main character with at least one disability, and (b) being a feature movie. Exclusion criteria included (a)

movies in the genres of science-fiction, animation, documentary, and fantasy; and (b) movies with the main character(s) with supernatural abilities.

As explained in Figure 1, 336 movies were obtained at the first step of screening with the keywords determined in the IMDB. The information in the database for each movie was examined and those in the categories of science fiction ($n = 61$), animation ($n = 12$), documentary ($n = 49$), and fantastic ($n = 29$) were eliminated.

Then, the storylines in the database were examined and the movies in which the main characters are not gifted or talented ($n = 36$) and do not have a disability ($n = 135$) were further eliminated. Finally, 8 movies were determined after eliminating the movies that appeared in multiple categories. Using content analysis processes, we organized the data from the documents (i.e., movies) into primary themes and categories (Elo & Kyngäs, 2008; Labuschagne, 2003).

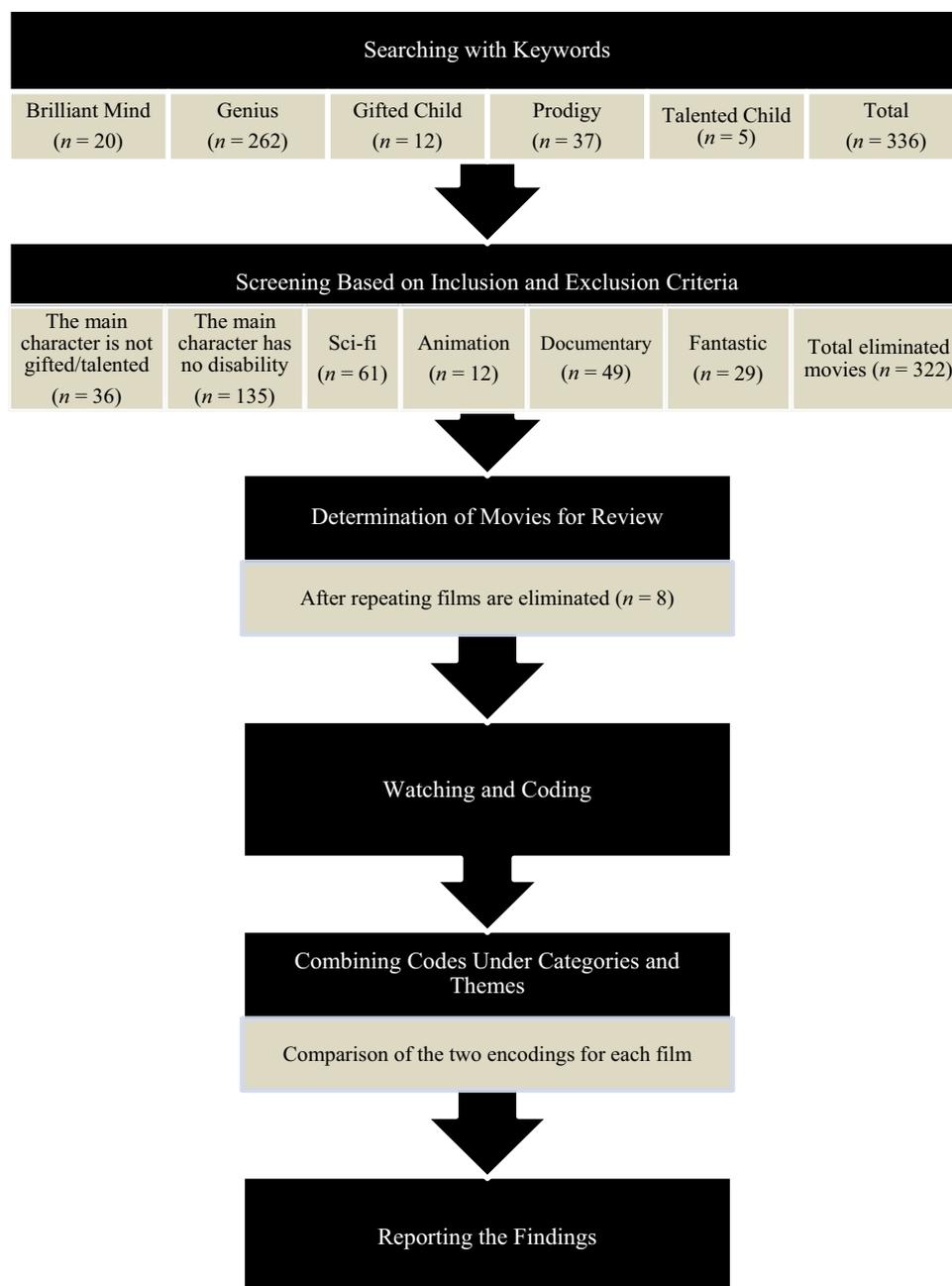


Figure 1. Research process.

Procedure

Before watching the movies, we determined which traits of the main characters were to be examined. We determined six themes: Personality, Cognitive, Socioemotional, Behavioral, Educational, and Difficulties Experienced by Families. The authors conducted a watching and coding process. The movies were randomly assigned to the authors and each movie was watched by two authors. While watching the movies, the authors sought an answer to: *How is the 2e portrayed and characterized in the movie regarding the predetermined themes?* The authors wrote a report on each movie. The reports included the description of the scene considered relevant for the research question and the min/sec in which the scene appeared. Next, each scene was independently converted into codes by all authors. Then, the authors who watched the same movies came together and compared the codes they individually determined and interrater agreement was calculated. In case of disagreements in the codes, the authors worked the process until they agreed on the same codes. Finally, all codes were combined.

Credibility and reliability

The screening process of the movies was independently carried out by the authors. Each author used the same keywords in search of the IMDB and later compared and contrasted their achieved lists. Authors mostly identified the same movies. In addition, each of the eight movies was watched and coded independently by at least two authors. Then, for each movie, an interrater agreement score was calculated using the “Consensus/Consensus + Disagreement” formula. The rate of agreement for all eight movies was over 95%. For disagreements in codes, authors worked on the themes until they agreed on the same codes. At the end of the process interrater agreement was 100% for each movie.

Summaries of the movies

My Name is Khan. The main character of the movie, Rizvan Khan who lost his father at a young age is a member of a Muslim family who spent his childhood with his mother and young brother in a deserted Indian resort. Khan has a diagnosis of Asperger syndrome.¹ Khan had a difficult life because his family did not know about his disability and moved in with his brother in the United States after the mother’s death. He is directed to the autism association by his brother’s wife

who is a psychologist there to receive training. He later falls in love with Mandira and marries her. The story of Khan is told in the context of family life, marital life, business life, and social life since childhood.

A Beautiful Mind. The movie is about the life of Nobel Prize winner John Nash. Nash is an asocial mathematician. He starts his education at Princeton University with the scholarship he won. Although he has difficulties in adapting to the social environment, he is known for his intelligence. The mathematician, who is famous for the theory he put forward while continuing his education, begins to struggle with schizophrenia. After a while, he reaches a point where he cannot distinguish between delusions and reality.

Temple Grandin. Based on a true story of Temple Grandin who did not speak or communicate with her mother until the age of 4, the movie covers a twice-exceptional individual’s life. The story of Temple starts changing when her mother decides to take her to a doctor. The doctor diagnoses Temple with autism and assumes that it is a type of childhood schizophrenia. He determines that she will never be cured. He advises the mother to hospitalize Temple. However, the mother does not accept the situation. She tries to provide education at home with her own facilities. Then she enrolls Temple in a school. However, Temple cannot establish positive relationships with her peers. A teacher who realizes her talent begins to take special care of Temple. From this point on, Temple achieves many successes, produces creative projects, and continues her educational life until she receives her doctoral degree in zoology.

Proof. The movie is about the relationship between a father who is a mathematical genius and his genius daughter, Catherine. Her father is hospitalized as a result of a serious illness at the age of 27. Catherine, on the other hand, decides to quit school at the age of 27 and lives with her father and tries to discover herself. Having worried that she would inherit both her father’s intelligence and illness, Catherine begins to experience hallucinations. Her condition worsens after the death of her father. The movie presents content that focuses on themes involving Catherine’s effort to prove herself and to balance her emotional state.

Copying Beethoven. Beethoven is in the last moments of his turbulent life. Although he has lost his hearing to an advanced degree, he works intensively on the ninth symphony that he has been composing. Anna Holtz is assigned to help him in his hard work. Anna

becomes his assistant. However, Anna has to sacrifice her private life due to Beethoven's difficult personality and arrogance.

X + Y. The main character of the movie, Nathan, has been diagnosed with autism. He is not good at social sciences but he performs much better in mathematics than his peers. While in elementary school, Nathan starts taking math at the high school level. He begins to prepare for the International Mathematics Olympics with the help of the teacher who is especially interested in him. Nathan will represent his country there. However, in the meantime, he begins to understand the “love” he could not make sense of before using mathematics.

The Theory of Everything. The movie deals with the true story of the British theoretical physicist Stephen Hawking who changed the history of modern science and technology. His relationship with his wife, Jane Hawking, starts from his university years. As a noted genius, Hawking is a student at Cambridge University. Meanwhile, he meets Jane Wilde, to whom he was married between 1965 and 1991. The happy relationship of the two takes on another dimension when Hawking is diagnosed with a motor-neuron disease at the age of 21. Against all odds, the couple marries and has children. The years exacerbate Hawking's illness and eventually lead them to a point where their relationship pushes the boundaries.

Rosso Come il Cielo. Translated as “Red Like the Sky” into English, the movie is about Mirco, a child who lost his sight as a result of an accident. At that time, visually impaired individuals receive education in separate educational institutions in Italy. Although his family is not willing, they have to send Mirco to a boarding institution for the visually impaired. Though Mirco cannot keep up with the environment initially, everything changes when he finds an old sound recorder. He records stories by using this machine as

a sign of his creative productivity. The movie is inspired by the life of the famous Italian sound technician Mirco Menacci.

Findings

All the movies are in the drama genre. The earliest available movie was produced in 2001. Information about the movies and main characters is given in [Table 1](#).

The Personality, Cognitive, Socioemotional, Behavioral, and Educational themes are listed in [Figure 2](#). Each theme with the exception of Behavioral contained codes of strength and weakness. For example, Arrogance is a code of weakness and Responsibility is a code of strength under the Personality theme. Positive codes are diagrammed in white while negatives are in black. Whereas the frequency of positive codes in the Cognitive and Personality themes are higher, negative codes in the Socioemotional, Behavioral, and Educational themes are in the majority.

Personality

We divided the theme into two categories: positive and negative. The positive category in the Personality theme included seven codes: *Openness to Experiences*, *Determination*, *Honesty*, *Responsibility*, *Curiosity*, *Motivation*, and *Extroversion*. The negative category of the Personality theme included four codes: *Lack of Openness*, *Selfishness*, *Arrogance*, and *Introversion*. Here exemplary scenes from which we determined the codes in this theme include:

- Stephen is a successful doctoral student at Cambridge University prior to his illness. He is an extrovert, who is at peace with his family and friends and never misses any parties, balls, gatherings, etc. In fact, he meets his wife, Jane, in a party. Even after his illness, he continues to actively participate in both social and scientific gatherings with the support of his wife. (Code: Extroversion, Movie: *The Theory of Everything*, Time: 03:01)

Table 1. Information on movies and main characters.

Movie (Year)	Genre	Gender	Ability/Talent	Disability	Level of Education
<i>My Name is Khan</i> (2010)	Drama	Male	Repairing	Asperger Syndrome	Elementary School
<i>A Beautiful Mind</i> (2001)	Biography, Drama	Male	Mathematics	Schizophrenia	PhD
<i>Temple Grandin</i> (2010)	Biography, Drama	Female	Zoology	Autism	PhD
<i>Proof</i> (2005)	Drama, Mystery	Female	Mathematics	Neurotic Disorders	PhD
<i>Copying Beethoven</i> (2006)	Biography, Drama, Music	Male	Music	Hearing Impairment	Not specified
<i>X + Y</i> (2014)	Drama, Romance	Male	Mathematics	Autism	High School
<i>The Theory of Everything</i> (2014)	Biography, Drama, Romance	Male	Cosmology	Physical Disability	PhD
<i>Rosso Come il Cielo</i> (2006)	Drama	Male	Sound Recording	Visual Impairment	Elementary School

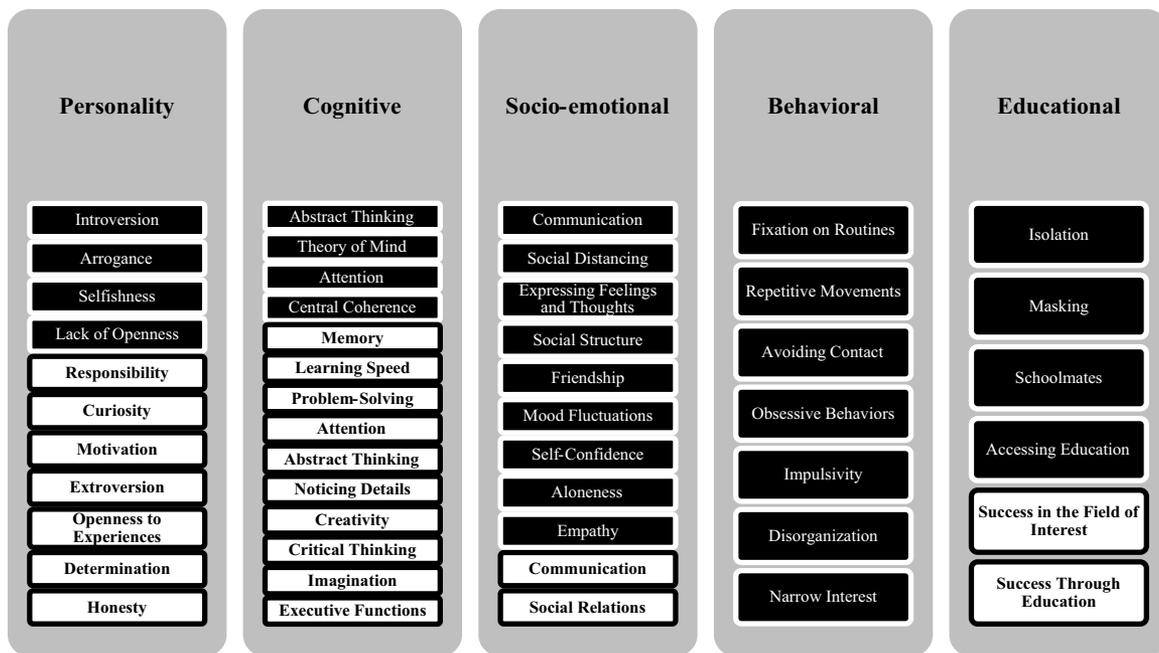


Figure 2. Characteristics of the main characters.

- Nash is so highly motivated that he sometimes cannot notice how time passes. For example, Nash has a date with his girlfriend, whom he intends to marry. However, he is late for the appointment. He says he did not notice how the time passed while he was working as usual and apologizes to her. It can be said that he is so highly motivated that he forgets his meeting with his girlfriend. (Code: Motivation, Movie: *A Beautiful Mind*, Time: 51:49)
- Nathan wants to participate in the International Mathematical Olympiads. For this purpose, he begins to take private tutoring. His mind is always on the Olympiads. During all lessons, he constantly asks his tutor about the Olympiads. Likewise, he examines the books about the Olympiads and watches the videos of the previous years. (Code: Motivation, Movie: *X + Y*, Time: 11:25)
- As a young Muslim man, Khan goes to help people suffering from the hurricane. He sees people gather in the church and at that moment the roof of the church collapses due to heavy rain. He helps people by repairing the church. (Code: Responsibility, Movie: *My Name is Khan*, Time: 02:15:01)
- Beethoven's assistant criticizes his composition. He gets angry and mockingly replies:

I can just imagine you at the creation, with your 2 decades of experience, saying to the Almighty, I think you've done a brilliant job with the world. I especially like South America . . . Africa, on the other hand, is a bit wide for my taste . . . I'm afraid, Her Godhead, you'll have to do it all over. I cannot tell you how much it means to me to know that you approve of my work.

Thus, he implies that his work is perfect like God's work. (Code: Arrogance, Movie: *Copying Beethoven*, Time: 15:40)

Cognitive

Two categories were formed under the Cognitive theme as Strengths and Weaknesses. The strength category of the Cognitive theme includes 10 codes: *Memory, Learning Speed, Problem Solving, Attention, Abstract Thinking, Details, Creativity, Critical Thinking, Imagination, and Executive Functions*. The weakness category of the theme includes 4 codes: *Lack of Central Coherence, Theory of Mind, Abstract Thinking, and Attention*. Here are exemplary scenes from which we determined the codes in this theme:

- Nash is summoned to the Pentagon to decode radio signals sent from Moscow. The scene emphasizes that computers cannot decode this signal. Nash, however, immediately deciphers the codes and says they correspond to latitudes and longitudes. (Code: Problem solving, Movie: *A Beautiful Mind*, Time: 51:49)
- Temple is in a French class, which she does not like very much. Her teacher tells her to read the page. Temple takes a glance at the page and replies that she has read it. The teacher does not believe her. He takes the book and asks her to read what is written. Temple begins to recite everything written on the page. She has memorized the page with a glance. (Code: Memory, Movie: *Temple Grandin*, Time: 26:02)
- Stephen continues his scientific studies despite all his health problems and develops groundbreaking theories. His theory of the space-time singularity and his book “A Brief History of Time” are prime examples of his creativity. (Code: Creativity, Movie: *Theory of Everything*, Time: 41:05)
- Nathan does not respond to the doctor who wants to entertain himself with a toy dinosaur in the examination room. The doctor asks: “Are you scared it will eat you?” Nathan replies: “No, because stegosaurus aren’t carnivores!” (Code: Details, Movie: *X + Y*, Time: 02:00)
- Nathan has just joined the Olympic team. The team leader takes him to the waiting room to meet his teammates. As soon as he walks through the door, a teammate immediately asks: “Hi, how do you do?” Nathan cannot understand and asks: “How do I do what?” The teammate says: “I mean, what is your name?” After a bit more struggle, they can finally meet. (Code: Theory of Mind, Movie: *X + Y*, Time: 29:19)
- Khan is on his way to Washington. The policeman stops and asks why he is going to Washington. He says he will meet with the president. With disbelief in his face, the policeman mockingly asks him to say hi to the president. Khan does not understand the policeman’s intention and takes note of it. When meeting with the president, he conveys the policeman’s salute. (Code: Theory of Mind, Movie: *My Name is Khan*, Time: 06:53)

Socioemotional

The strength category of the Socioemotional theme includes *Communication* and *Social Relations*. The weakness category of this theme consists of

difficulties in *Communication, Social Distancing, Expressing Feelings and Thoughts, Social Structure, Friendship, Mood Fluctuations, Self-confidence, Aloneness, and Empathy*. Here are exemplary scenes from which we determined the codes in this theme:

- Temple has to attend a large party and this bothers her. After a while, she goes to her room where she can be alone. She tells her mother that she does not understand people and that is why she hates parties. (Code: Aloneness, Movie: *Temple Grandin*, Time: 01:20:35)
- Nash is encouraged by his friends to meet the girl who keeps staring at him while they are having fun at the bar. Nash plucks up his courage and attempts to meet the girl. The girl waits for Nash to start talking. Then, she says: “Maybe you want to buy me a drink!” Nash replies: “I don’t exactly say what I’m required to say in order for you to have intercourse with me, but could we assume that I said all that?” The girl gets angry, slaps Nash, and walks away. (Code: Communication, Movie: *A Beautiful Mind*, Time: 13:58)
- Speaking at the funeral of her father, who was a respected man in the scientific community, contrary to what was socially expected from her, Catherine says that she is happy for his death by emphasizing the troubles she and her father had during his illness rather than focusing on happy memories with him. (Code: Social Structure, Movie: *Proof*, Time: 27:13)
- Catherine does not display a consistent mood throughout the movie. For example, she is sometimes happy, lonely, or fearful; experiences emotional mood swings after her father’s death; and despairs for the future. Her experiences push her into a crisis of doubt, paranoia, distrust in people around her, including her own sister, and insecurity about the mathematical proof she developed. This volatile mood reaches its climax in tough arguments she has with her father’s hallucination. (Code: Mood Fluctuations, Movie: *Proof*)
- Nathan’s teacher, Mr. Humphreys, comes to Nathan’s house to open the envelope containing the results of the Olympic team selection. Nathan’s mother is thrilled when she realizes the results are about to be announced. Nathan, however, does not react. When the teacher opens the envelope and reads the result, his mother puts her hands on her face and shows

her happiness while Nathan leaves by saying that he must work. There's no show of any joy. (Code: Expressing Feelings and Thoughts, Movie: *X + Y*, Time: 21:44)

Behavioral

The behavioral theme included codes only under the negative characteristics. These codes are *Fixation on Routines*, *Repetitive Movements*, *Avoiding Contact*, *Obsessive Behaviors*, *Impulsivity*, *Disorganization*, and *Narrow Interest*. Here are exemplary scenes from which we determined the codes in this theme:

- Her aunt wants to hug Temple. But she does not like it. (Code: Avoiding Contact, Movie: *Temple Grandin*, Time: 7:55)
- Catherine cannot take care of her home, or even herself. The house becomes messy and dirty. She does not join in any social events. Also, she neglects her education and faces many troubles. (Code: Disorganization, Movie: *Proof*, Time: 17:35)
- Nathan's mother wants to order Nathan the usual menu at the restaurant (menu 47: Seven prawn balls and small chips menu). However, the usual waiter has changed and this one says they want six prawn balls on the menu, not seven. His mother says that they come here all the time and that an extra prawn ball is put in each time. The waiter says they can get a large menu (menu 48: nine balls, large chips, and crackers) instead. His mother, on the other hand, replies that her son is a bit picky, likes small chips, and that the menu number and the number of prawn balls are important to her son. (Code: Fixation on Routines, Movie: *X + Y*, Time: 17:35)

Educational

There are two categories under the theme of findings related to Educational. These are the categories of *positive* situations and *negative* situations. The codes of *Success in the Field of Interest* and *Success Through Education* are in the positive category. The negative category is composed of the codes involving problems in/with *Accessing Education*, *Isolation*, *Masking*, and *Schoolmates*. Here are exemplary scenes from which we determined the codes in this theme:

- Temple is having problems at school. But a teacher realizes that she has special abilities. He begins to take special care of Temple to improve her abilities. His effort results in Temple producing successful projects. (Code: Success Through Education, Movie: *Temple Grandin*, Time: 46:45)
- His teacher gives Mirco a new recorder. Mirco produces great recordings with his friends. His teacher wants to prove Mirco's talent to the principal by presenting his recordings. But the principal does not appreciate the product and insists that a blind child's imagination and creativity do not matter; he must just follow the rules. (Code: Masking, Movie: *Rosso Come il Cielo*, Time: 01:16:40)
- Khan cannot have a positive social environment at school because he gets bullied. He is very lonely. (Code: Isolation, Movie: *My Name is Khan*, Time: 13:58)

Difficulties experienced by families

Under this theme, generated codes include *Loneliness*, *Despair*, *Fear*, *Professional Support*, and *Communication*. Here are exemplary scenes from which we determined the codes in this theme:

- Her mother takes care of Temple on her own. Nowhere in the movie does a father figure appear, nor is there anyone to help the mother except her sister. (Code: Loneliness, Movie: *Temple Grandin*, Time: 23:45, 25:00)
- Nash is diagnosed with schizophrenia. After discussing Nash's situation with his old friend in the garden of Princeton University, he greets Alicia (Nash's wife) and asks how she is holding up. Alicia dodges the question and starts explaining how Nash is doing. The friend interrupts and emphasizes how is SHE. She then replies:

I think often what I feel is obligation . . . or guilt, over wanting to leave . . . rage, I guess against John, against God . . . but then I look at him [meaning her baby in the crib] and I force myself to the man that I married and he becomes that man. He is transformed into someone that I loved . . . I am transformed into someone who loved him . . . It's not all the time but that's enough!

(Code: Despair, Movie: *A Beautiful Mind*, Time: 01:21:30)

- While Nathan is writing complex formulas in his room, his mother knocks on the door and enters his room. She greets and calls out: "Gosh! That looks complicated!" *This is not school work then. And why*

don't you try to explain it to me. I might be able to help you. Nathan replies that she cannot help. His mother asks why. Nathan replies: “*You are not clever enough.*” (Code: Communication, Movie: X + Y, Time: 7:25)

- Before dying, Khan’s mother, who is worried about Khan’s future, wants Khan to go to America and lead a good life together with his brother. (Code: Fear, Movie: *My Name is Khan*, Time: 19:58)

Themes across characters

Our findings suggest that there are differences in the themes that result from the characters’ diagnosis of disabilities. There are three movies in which the main characters are diagnosed with ASD (*My Name is Khan*, *Temple Grandin*, and *X + Y*), three movies with physical or sensory disabilities (*Theory of Everything*, *Copying Beethoven*, and *Rosso Come il Cielo*), and two with psychotic disorders (*Proof* and *A Beautiful Mind*).

We observed that the weakness category of the Cognitive theme consists of movies with main characters who have ASD. This category includes *Central Coherence*, *Theory of Mind*, *Abstract Thinking*, and *Attention* codes. Furthermore, the Behavioral theme is mostly contained in the traits of ASD (e.g., *Fixation on Routines*, *Repetitive Movements*, and *Avoiding Contact*).

It is noticeable that the positive characteristics category of the Socioemotional theme consists of movies in which the main characters have physical or sensory disabilities. This category includes *Communication* and *Social Relations* codes. Similarly, these characters exhibit mostly positive personality characteristics such as *Responsibility*, *Motivation*, and *Openness to Experiences*.

We observed that characters with psychotic disorders have mostly negative personality codes such as *Introversion* and *Lack of Openness* whereas they have codes from strength characteristics such as *Memory*, *Noticing Details*, and *Creativity*. Table 2 contains all the themes, categories, codes, and the movie from which the codes are derived. All findings we mentioned are summarized in this table.

Discussion

Noticing, diagnosing, and supporting students with special needs and providing timely and proper educational services for them is a challenging, critical, laborious, and specialized process. The entirety of the job doubles with twice-exceptional individuals, in addition to many factors, because their abilities may mask disabilities or vice versa (Montgomery, 2015).

The powerful effect of cinema as a public message transmitter in contemporary societies is the genesis of the current research. However, there is no specific emphasis on twice-exceptionality in the existing movies. Pfeiffer and Foley-Nicpon (2018) state that the existing knowledge on twice-exceptionality is mostly based on case studies and anecdotal clinical reports and there were no comprehensive studies on the topic.

Although there is no clear diagnostic profile, the definitions of twice-exceptionality agree on “... a gifted or exceptional student with ... disability (e.g., learning, physical, emotional, or behavioral” (Amend, 2018, p. 69). In current research, we conceptualized 2e as *highly gifted/talented or creative in a valued area(s) of the society in which they live and have a disability at least in one developmental area, both of which are evidenced by professional assessments, and thus need special support*. Based on the combinations of the elements of this definition, we determined that the analyzed characters are indeed 2e.

Summary of the findings

Most 2e individuals in the movies exhibit personality traits perceived by society as both positive and negative. We observed that higher motivation is the most repeating characteristic among the positive traits and introversion is the most repeating among the negative traits. In the relevant literature, higher motivation is indeed considered one of the common characteristics of the gifted (e.g., Renzulli, 2016). In the Cognitive theme, the strengths of 2e are more frequently presented than the weaknesses. Among these traits, skills such as creativity, paying attention to details, and strong memory do come to the fore. These cognitive traits are also among the common characteristics of the gifted in the literature (e.g., Johnsen, 2004). However, negative characteristics in the cognitive theme are mostly those associated with autism spectrum disorder such as weak Theory of Mind skills, abstract thinking (Attwood, 2006; Baron-Cohen, 2005), central coherence (Vanegas & Davidson, 2015), and attention (Reis et al., 2014). These cognitive deficiencies are more noticeably exhibited in the movies *Temple Grandin*, *My Name Is Khan*, and *X + Y*. In the Socioemotional and Behavioral themes, mostly negative characteristics are presented. For example, there are only two codes on the positive characteristics (versus nine on the positives) in the Socioemotional and none in the Behavioral themes. When the educational life of the characters is examined, both positive and negative situations are presented nearly equally. On the

Table 2. Themes, categories, and codes.

Theme	Category	Code	Movie		
Personality	Positive	Responsibility	1, 2, 5, 7		
		Curiosity	3, 5, 6, 8		
		Motivation	1, 2, 3, 5, 6, 7, 8		
		Extroversion	1, 3, 7, 8		
		Openness to Experiences	5, 7, 8		
		Determination	1, 2, 7		
	Negative	Honesty	1, 3, 4, 6		
		Introversion	2, 3, 4, 5, 6		
		Arrogance	2, 5		
		Selfishness	2, 5		
		Lack of Openness	4, 6		
		Cognitive	Strengths	Memory	1, 3, 4, 5, 7
				Learning Speed	1, 3, 6
Problem Solving	1, 2, 3, 6, 8				
Attention	2, 5, 7				
Abstract Thinking	2				
Noticing Details	1, 2, 3, 5, 6				
Creativity	2, 3, 4, 5, 7, 8				
Critical Thinking	2, 3				
Imagination	2, 8				
Executive Functions	1, 2, 8				
Weaknesses	Central Coherence		1		
	Theory of Mind		1, 3, 6		
	Abstract Thinking		3, 6		
Socioemotional	Negative	Communication	1, 2, 3, 5, 6		
		Social Distancing	1, 2, 3		
		Expressing Feelings and Thoughts	1, 3, 5, 6		
		Social Structure	1, 2, 3, 4, 5		
		Friendship	1, 5		
		Mood Fluctuations	2, 4, 6		
		Self-Confidence	4, 6		
		Aloneness	3, 4, 6		
		Empathy	3, 6		
		Positive	Communication	7, 8	
	Social Relations		7, 8		
	Behavioral		Negative	Fixation on Routines	1, 3, 6
		Repetitive Movements		1	
Avoiding Contact		1, 3, 6			
Obsessive Behaviors		2, 3, 6			
Impulsivity		1, 2, 3			
Disorganization		4, 5			
Narrow Interest		2, 3, 6			
Positive		Success in the Field of Interest		2, 3, 6, 7, 8	
		Success Through Education		1, 3, 6	
		Negative		Accessing Education	1, 3, 8
Isolation			1, 2, 3		
Masking			1, 3, 8		
Schoolmates			1, 2, 3		
Difficulties Experienced by Families	Difficulties	Loneliness	2, 3, 4, 5, 6		
		Despair	2, 3, 4, 7		
		Fear	1, 2, 3		
		Professional Support	3		
		Communication	3, 6		

Note. 1: *My Name is Khan*, 2: *A Beautiful Mind*, 3: *Temple Grandin*, 4: *Proof*, 5: *Copying Beethoven*, 6: *X + Y*, 7: *The Theory of Everything*, 8: *Rosso Come il Cielo*.

positive side, success in the interested area is the most highlighted code. On the other hand, the codes of isolation, masking, inability to access appropriate educational services, and communication difficulties with their peers emerge in the category of negative. These can be considered as social adaptation problems experienced by 2e.

Discussion of the findings

In the Socioemotional theme, we identified that the movies focused on particularly negative characteristics. To illustrate, in *Proof*, Catherine has to cope with the fear of experiencing the same problems as her father and feels lack of self-esteem. Likewise, Khan, in *My name is Khan* and Temple in *Temple Grandin* have to overcome

the emotional and social barriers they faced in their schools. However, when a positive approach toward these characters is available, they are able to overcome the problems. In *Temple Grandin*, the support comes from the teacher whereas in *My name is Khan*, it comes from the mother and wife. We can conclude that while 2e have to deal with the social and emotional obstacles, this process is relieved when they receive support. Support for 2e is usually available from family members or educational professionals. Galbraith (2018) supports our conclusion by stating that 2e individuals need socio-emotional support and that they are more likely to be successful when it is available.

The 2e individuals with ASD have to cope with serious behavioral problems both in society and schools. We determined negative behavioral codes that are mostly related to ASD symptoms. This may be due to the fact that ASD is increasingly diagnosed across different parts of the world. We were unable to find any movie in which the main character exhibits the symptoms of SLD or ADHD.

Although the masking problem in movies is concentrated in certain areas, it is depicted in a way in which masking prevents other abilities or disabilities from being noticed (Montgomery, 2015). On the other hand, movies convey important messages. To illustrate, the characters in *Temple Grandin* and *X + Y* develop and achieve success when they find the appropriate support. For example, Temple produces successful projects thanks to the special care of her teacher. On the other hand, the biggest obstacle to the success of the character in *Rosso Come Il Cielo* is the educational system itself. To exemplify, the principal restricts his creativity in sound recording. The common point of these messages is that when appropriate educational services are provided, 2e individuals can be successful; however, they are usually dragged into unsuitable educational services. There clearly is evidence in the literature that the educational programs that students with typical development attend are not sufficient for 2e individuals (Willard-Holt et al., 2013). They show significant improvements within the programs designed specifically for them (Baum et al., 2014).

The social environment and socioeconomic status (SES) of the family, including their educational level, and educational services provided in the macro (i.e., state) or micro (i.e., local) levels are critical. Khan is a member of a Muslim family that comes from a lower SES where educational services are very limited for those in need of special education. His parents are, though not explicitly stated, elementary school graduates and unaware of Khan's special educational needs. Therefore, they feel alone

and desperate when Khan faces adaptation problems at his elementary school, which is far from providing the appropriate educational environment for those with ASD. On the other hand, Stephen Hawking, Nathan, Catherine, and Temple are the children of higher SES families from the United Kingdom and the United States where they have access to more qualified educational opportunities. These families have to grapple with psychological issues rather than sociological or educational problems. Nevertheless, the common element in most movies is the crucial role of familial support regardless of their SES.

It is clearly visible that the more families are aware of what their child has to fight with and how they can help her/him, the better the results are. When families accept the situation and educate themselves about the condition, they help their children better with regard to both their emotional-behavioral development and social and educational experiences.

Another outstanding reflection from the movies is the role of mothers and fathers. As conveyed in the literature, the heavier roles and responsibilities rest on the mothers in the movies. The 2e individuals are supported in most movies by a female figure, whether that be a mother, wife, or an assistant. For example, Khan is supported by his mother and is able to get a professional intervention from his sister-in-law, who is a psychologist in the United States. As for Proof, her sister tries to help Catherine regulate her life after their father's death. Likewise, Stephen achieves his dream with the help of his wife. Beethoven completes his symphony with the support of his female assistant. Parents of 2e individuals have difficulty finding educational environments that consider children's differences (Rubenstein et al., 2015), but when finally, they do, support personnel are mostly female. Therefore, the movies depict realistic information about the difficulties the families of 2e individuals face. The inclusion of male characters such as fathers in movies might be good. Analysis of the movies reveals that the main characters are not deliberately and consciously designed as 2e as the movies generally focus on single side of the character: either the high ability or disability. For example, in *My Name Is Khan* and *Temple Grandin*, the characters' ASD is emphasized with all its diagnostic characteristics while their high talents are ignored. In contrast, in *A Beautiful Mind* and *The Theory of Everything*, the characters' abilities are the focus while ignoring their disabilities. On the other hand, the existence of 2e, their characteristics, the events from their lives, the difficulties they encounter, their family and educational lives, resemble those of the

person depicted, especially in biographically based movies. Therefore, descriptions in the movies mostly overlap with the findings from the literature. The fact that the effect of ASD is seen in three of the eight movies and that the 2e characters of these three movies are men are compatible with revelations in the literature (e.g., Rivet & Matson, 2011).

The main characters with ASD in the movies do not experience any problems associated with executive functions (Pellicano, 2012). For instance, Khan tries to meet the American president and makes plans, follows the president, and reaches his goal. Similarly, Temple achieves groundbreaking projects on cattle dealing that require beyond executive functions. Kalbfleisch and Loughan (2012) reported that favoring verbal IQ may support executive function in high functioning ASD. Thus, these findings are also coherent with the literature.

It is striking that SLD and ADHD are not among the deficiencies of the characters in any of the movies. Additionally, there are conflicting scenes in some cases with the worry of delivering a cinematic message. For example, in *My Name is Khan*, Khan suffers from weak theory of mind skills as a fundamental feature of ASD and has difficulty understanding people's intentions. However, Khan's comprehension of the intention of the person who preaches to people around him in the mosque, even just by overhearing, contradicts this basic knowledge. In $X + Y$, although Nathan avoids physical contact due to ASD throughout the movie, he falls in love with a girl at the end of the movie and he does not mind his mother touching him. He even thrusts out his hand to his mother for the first time.

It can be said that the messages and teachings regarding 2e displayed in the movies are mostly accurate, hopeful, and optimistic. All the movies reviewed have a happy ending. Usually, the characters achieve success at the end. The role of love, care, and support is emphasized in this success. However, as we discussed earlier, the characters in the movies are not handled as 2e, but in terms of a certain talent or disability. In this sense, we believe that putting 2e into the center in new projects in the future will increase the awareness and facilitate the access of these individuals to the better educational means appropriate for their needs and characteristics.

Conclusion

We conclude that even though movies do not fully reflect reality, they do a decent job in depicting 2e. They also form and/or reflect societal perceptions on 2e. We conclude that the characteristics of 2e

individuals and the problems they face are explicitly and clearly depicted in the movies, creating awareness of this special population while entertaining the public. In this context, information presented in the movies mostly overlaps with the knowledge available in current research literature. Increasing the quantity and quality of such movies can help different individuals make true inferences about themselves and people around them and also increase the awareness of parents and teachers about 2e. In addition, it may be useful to give the message in movies that, like those with other characteristics, not all 2e individuals are alike.

Last but not least, all movies we reviewed are in drama genre. Even if they have good endings, the stories are full of touching scenes. To make the concept of twice-exceptionality familiar and understandable, we recommend that funny stories about twice-exceptionality such as gifted children with ADHD or SLD should be centered in future movie scenarios. Future studies need to address the effects of the reviewed movies on knowledge and perceptions of teachers, students, and parents toward twice-exceptionality. Furthermore, future studies may examine what is the lived experience of 2e individuals while watching movies based on twice-exceptionality.

Limitations

The movies subject to examination were determined by screening the titles and summaries within the framework of the determined keywords among the movies in the IMDB directory. Therefore, it is limited in that it excludes movies that are in other directories or with main characters that are 2e even if there is no predetermined keyword in its summary or title. In addition, the elimination of other genres such as TV movies, series, short movies, and many others like animation, documentary, and science fiction is another limitation.

Implications for practice

Movies may increase classmates', families', and teachers' awareness of the fundamental characteristics and social-emotional upheavals of 2e. The movie-watching technique, referred to as guided-viewing (Hébert & Neumeister, 2001) or cinematherapy (Newton, 1995), primarily facilitates self-knowledge and the development of self-identity. Movies in question that are appropriate for the individuals' needs can be selected and watched for this purpose. The positive and negative depictions and emotional transitions revealed by the movie hero can be discussed after the movie. Individuals can be asked to draw inferences with their own lives. When the

emotional sharing of individuals increases, they empathize with the movie character and reveal their own inner worlds (Hébert & Neumeister, 2001). Conejeros-Solar et al. (2021) state that empathy is an essential factor in 2e individuals' close friendships and other relationships. Thus, the reviewed movies can enable students to empathize with the lives of 2e individuals, and this may facilitate the friendship relations of 2e individuals. However, it is critical that the features and situations depicted in the movies be real and scientifically accurate.

Counseling services are the most appropriate settings for discussions in which the movies in question are the mainstay and students can participate. Guided-viewing activities conducted by counselors will be appropriate for this purpose. Sessions can be held as seminars for parents organized by counselors.

Also, these movies may be used for teacher training. It would be the best practice to include 2e as a unit within the scope of teacher training programs. For teachers who are already on duty, consultation by counselors will be a very desirable discussion program. We have presented a discussion activity that can be used in both secondary and high schools below. This activity can be easily adapted for teachers and families using similar steps. While planning the event, the principles of Shrodes (1949, as cited in Hébert & Neumeister, 2001) can be taken into consideration.

As an example, students watch *My Name is Khan* and the follow-up discussion is then carried out using the following stages to draw the attention of peers to twice-exceptionality:

- Identification (stage 1): What are the fundamental characteristics that Khan displays? What makes Khan different from his peers at the school?
- Catharsis (stage 2): How would you feel if you were excluded from your school by your peers and teachers like Khan?
- Insight (stage 3): What would you do if you were Khan? Keep your promise to your wife or give up struggling?
- Application (stage 4): Is there anyone around you with similar characteristics? What is your relationship with her/him? How do you think we should interact with her/him?

Note

1. DSM-V classifies Asperger syndrome under the autism spectrum disorder (American Psychiatric Association, 2013).

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