

# An Examination of the Representation of the Autistic Community in Film

Raquel Diaz<sup>1</sup>, Daniel Olivo<sup>1#</sup> and Kayla Ciliento<sup>#</sup>

<sup>1</sup>Bergen County Technical Schools- Teterboro

<sup>#</sup>Advisor

## ABSTRACT

Autism spectrum disorder (ASD) is a life-long neurodevelopmental disorder where individuals with a diagnosis have communication challenges and many restrictions within their everyday life. Being a disadvantaged community, they tend to face discrimination and stigmatization on social media associated with social withdrawal and lower mental health. Their representation in film may have similar effects yet rarely studied. This study uses a directed content analysis with codes derived from the DSM-5 test and Baker's Autistic Formula in order to calculate frequencies, duration, and percentages of movies devoted to each stereotype or criterion. The results from this research reveal that although the film industry is being representative, they may be over-using certain symptoms and using stereotypes that the autistic community may find offensive.

## Literary Review

Autism spectrum disorder (ASD) is a life-long neurodevelopmental disorder where individuals with a diagnosis have communication challenges and many restrictions within their everyday life (Dean, 2021). This population has increased significantly in recent years, making it one of the largest disadvantaged communities in the entire world. The amount of people with autism, specifically in the United States, has dramatically increased from 1 in 150 in 2000 to 1 in 44 in 2018 (Dean, 2021).

Being a disadvantaged community, they face discrimination on all different levels, especially in an era of increased media creation and consumption. Even on social media, those with autism are subjected to be victims of cyber-bullying and aggression. People with autism spectrum disorder (ASD) are stigmatized and experience marginalization, exclusion, violence, dehumanization, and negative stereotypes in person and now virtually in internet spaces and social media (Soffer, 2022). This also contributes to the sociology ideas of the modified labeling theory (MLT) as those with autism are labeled negatively for the public, resulting in those with autism being negatively stigmatized (Soffer, 2022). Stigmatizing those with autism with negative traits limits the public's perception that autism is a spectrum. Rather, able-bodied people, people without autism or a disability, will limit their view of people with autism to certain labels that may have negative connotations attached to them. Limiting the autistic community to labels can be very harmful to the public's perception of autistic community as autism is a spectrum. Autism being a spectrum means that every person has different symptoms and experiences associated with autism, and not every autistic person will have certain traits or symptoms.

People who are stigmatized may also feel the need to protect themselves from the outcomes of stigmas and endorse various stigma techniques such as introversion and social withdrawal. They adopt these types of measures in order to resist or challenge the perceived public stigma (Soffer, 2022). Showing that once a person with autism views stigmatizing material, it may affect their mental health and not only other's perceptions of them but their perceptions of themselves and how they interact with others.

In a 2021 study, Triantafyllopoulou even found that of the participants in his study that had autism, 85.7% participants said that social media was part of their everyday life while 77.9% said it was part of their daily routine.

Of these, 31% said that they experienced cyber-bullying victimization within the past two to three months. 24% said they were excluded or ignored in chat rooms while 23% said someone said stigmatizing things about them online, leading to lower self-esteem and heightened loneliness on social media. Connecting these effects with the ideas of MLT, having a form of media whether it is social media, or the film industry can be detrimental to people within the autistic community. If social media has a correlation with the decrease in well-being within the group, there is a possibility that having stigmatized film representation could also have effects in well-being (Triantafyllopoulou, 2021). Showing how technology and media is a very strong and important factor in the autistic community which further raises the question on how other forms of media affect those with autism. If the film industry is found to have stigmatizing material, it could have similar consequences to stigmatization of the autistic community on social media. Even though there are studies examining social media, there are very few studies out there that examine how the autistic community is represented in the film industry.

Although there are very few studies on the film representation of the autistic community, the few studies that do exist have revealed varying results. There have been studies focused on the lack of love interests for autistic characters, the hardships of dating, and intersectionality where there are not as many autistic characters of minority races such as African-American (Roese 2022). Other pieces of literature have identified trends of depression in movies with characters with autism. This has hidden messages where people with disabilities are only happy when they get rid of their disability or someone comes in to save them (Lightner, 2021). This, if true, can harm the community as it makes their lives seem limited and can not live a fulfilled life with a disability. Some shows also only cover certain parts of life with someone with a disability such as attending a specialized school and not other enriching experiences in life (Singer, 2017). With this in mind, producers must make sure they are not over-using certain plot lines in order to make sure that they accurately portray the community. People with disabilities make up 15% of the global population, making them one of the largest marginalized groups. With 15% of the global population, only 3.1% of characters on TV have some type of disability while 95% of characters were played by able-bodied actors (Salameh, 2021). This further emphasizes how one of the most disenfranchised communities are being unable to view themselves on television and portray their stories although most of the autistic population is on social media and technology. Yet film representation does go far beyond the actor playing the character, how the character is portrayed will affect how people perceive others with autism and even how people with autism perceive themselves.

With very little research studies of the film representation of the autistic community, most of these studies are focused on the over-representation of savants. Savants are typically white, autistic males (although they do not have to be white or male) that excel in a specific field (typically STEM-related fields). The DSM-5 Test, used to diagnose people with autism, has been used in the past before to find the over-representation of savants in the film industry. In one research study, out of the 26 characters they analyzed, 12 of the characters were identified with savant abilities. With this, seven of those characters received the maximum amount of scoring in savant abilities (Nordahl-Hansen, 2017). It is important to note that 46% of autistic characters have savant abilities when only 10% of people with autism exhibit these behaviors in real life (Roese, 2021). This shows that this symptom is used far beyond needed, making it seem as most stories of those with autism in movies are savants. Therefore, many researchers have started to consider savants a stereotype.

With more and more movies featuring characters with autism being released as time passes, responses from the autistic community have varied based on the different standards. Films and television shows like “Rain Main” and “The Big Bany Theory,” have been challenged by the autistic community for their lack of representation, while the Disney film “Loop” and new television shows such as “Everything’s Gonna Be Okay” or “Love on the Spectrum” have been praised for their accurate representation (Organization for Autism Research, 2022).


Film representation is important to examine to verify that the community is being fairly represented and does not contain offensive materials that send messages to able-bodied people or harmful messages to the autistic community’s perceptions of themselves (Autism Learning Partners, 2021). This research study will be the first to use both DSM-5 criteria and Dr. Baker’s Autistic Formula in multiple movies to examine these questions of whether the autistic

community is being fairly represented or if there is stigmatization within these movies that could potentially cause similar effects to stigmatization of the autistic community on social media.

## Methods

This study specifically uses a direct content analysis in order to examine the portrayal of main characters with autism. Codes for the direct content analysis were directly derived from the DSM-5 Test (Table 1), which is used to diagnose people with autism, and Dr. Baker’s Autistic Formula (Table 2), which are commonly used stereotypes in film. Using the direct content analysis method allows this study to use pre-conceived codes developed from experts. Using a conventional content analysis would put this research at higher risk of personal bias. Since the DSM-5 test has been used, more people with autism have been able to be diagnosed, highlighting the relevance of the test.

**Table 1.** DSM-5 Test Criteria. This table describes the four different criteria used in the diagnosis process for people with autism.

<p>First Criterion</p>	<ol style="list-style-type: none"> <li>1. Deficits in socio-emotional reciprocity</li> <li>2. Abnormal approaches to failure of back and forth conversations</li> <li>3. Reduced sharing of interests, emotions, and social interactions</li> <li>4. Deficits nonverbal behaviors like impairment in eye contact, body postures, abnormal volume, and facial expressions</li> </ol>	 <p>These examples are all from the <i>Story of Luke</i></p>
<p>Second Criterion</p>	<ol style="list-style-type: none"> <li>1. Restrictive repetitive patterns of behaviors, interests, and/or activities (stereotyped or repetitive speech, noted movements, and use of objects)</li> <li>2. Extreme resistance to Changed in highly restrictive interests in intensity and focus</li> <li>3. Hyper or hypo reactivity to sensory input- can be high pain tolerance, attraction to texture, and licking or sniffing objects</li> </ol>	<p>Examples: Rocking back and forth Repeating the rules that his caregiver giving him before leaving the house as he walks on the street to get to his interview (<i>Story of Luke</i>)</p>
<p>Third Criterion</p>	<p>symptoms from other two criteria in early childhood even if they do not harm social interactions until a later age (about 8 years old or younger)</p>	<p>Examples: Flashback from a videotape that Wendy’s sister watched while they were children (<i>Please Stand By</i>)</p>

Fourth Criterion	<p>1. Symptoms together limit everyday tasks which can be rated on a three level severity scale</p> <p>a. Level 1- requiring support</p> <p>b. Level 2- requires substantial support</p> <p>c. Level 3- requires very substantial support</p>	<p>Examples:</p> <p>Some on Level 1 may be able to do independent activities such as work and can walk down the street by themselves.</p> <p>Someone on Level 2 is in the middle of Level 1 and 3 while they may need a little more assistance than Level 1.</p> <p>Someone on Level 3 will be much more assistance than Level 1 and 2, and they may need help doing basic activities like eating.</p>
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**Table 2.** Stereotypes in Dr. Baker’s “Autistic” Formula. This table describes all six stereotypes Dr. Baker defines in his study with examples from each movie examined.

Quirky/Cute Qualities	The autistic character exhibits a “childlike” innocence in their actions or has a “childlike” intrigue in the seemingly mundane	”I want to screw” ( <i>The Story of Luke</i> ) Luke means screw as in engaging in sexual activity, yet he is unaware of the exact meaning behind his statement.
Depicting reliance on Caregivers	Having to work through difficulties with the help of a guardian or trusted individual (i.e parent, counselor, a trusted friend)	Luke needs a Smile supervisor to teach me how to be in the workforce ( <i>The Story of Luke</i> )
Savant/Superhuman Skills	having abilities or skills that go beyond what is possible for an average individual	Donald Morton was able to divide numbers in the matter of seconds ( <i>Mozart and the Whale</i> )
Separation from Support System	The autistic character not being able to contact or rely on a caretaker at any given moment	Luke loses his grandma in the beginning of the movie who took care of him all his life when his mother abandoned him ( <i>The Story of Luke</i> )
Endanger Character	The autistic character being put at risk due to their inability to contact their caregivers	When Jackie is took a nap, Glory climbs on top of the roof ( <i>Jack of Red Hearts</i> )
Saved by “Hero”	a non- autistic character protecting/removing the autistic character from the dangerous situation	Glory is failing her interview at a selective school until Jackie comes. When Jackie comes, Glory is able to complete the tasks ( <i>Jack of Red Hearts</i> )

This proposed design helps accomplish the goal of studying the portrayal of main characters with autism as the media has been split in recent years if the characters are getting the representation they deserve. Using the DSM-5 test means these are symptoms that people with autism actually experience. It is important to take note that autism is a spectrum, and every person will have different symptoms within the DSM-5 test.

When choosing movies to analyze, each movie had to pass three requirements: the movie had to be produced after 2001, had to be produced in the United States, and one of the main characters had to have autism. The first requirement was selected as after 2001, the start of the dramatic increase of those diagnosed with autism began, making the community one of the biggest disenfranchised groups in the world, with one in four people having autism in the United States. It also had to be produced in the United States as although ableism is a global problem, it is easier to focus on one geographical area as every country has different ideals, beliefs, and discriminates differently. Then, one of the main characters had to have autism, and each movie only focused on one main character with autism. If there was more than one, the results were only based on one of the characters. For example, in the movie *Mozart and the Whale*, the results for this movie only focused on Donald as he was the main character, even if his love interest and friends had autism. This requirement was enforced as movies as being the main character of a movie typically correlates with being the main focus and receiving more screen time.

With all three requirements in mind, this study identified 24 movies that fit all three requirements but due to feasibility issues, a random generator website was utilized to randomly generate five movies in order to minimize personal bias. Personally, choosing the five movies would lead to the data could have easily been manipulated or skewed. To make this study the most credible as possible, it was important that the movies were randomly selected.

Movies were watched through various streaming sites such as YouTube and Amazon Prime. While watching the movies, frequencies were organized through a spreadsheet. Every movie had two spreadsheets: one for the DSM-5 test and one for Dr. Baker's Autistic Formula. In each box, the action, time stamp, and frequency occurred. Duration was calculated in seconds. After calculating the duration with each column, it was divided by the amount of seconds within the movie to get the percentage of each criterion or stereotype within each movie as all three (frequency, duration, and percentage) are essential in determining whether the film industry is being representative of the autistic community.

One major limitation within this work is that when counting the frequencies is if two stereotypes within the same criterion happened at once, I only counted it as one frequency, but if one action counted in two different codes, I counted them separately. For example, if a character made an unusual facial expression, unusual body posture, and made an unusual noise at the same time, I only counted it once as all three actions are found within the first criterion of the DSM-5 test. So, the viewer would only be seeing them do actions from the first criterion at the exact same time, and they are not seeing it separately. But if they were going to have a weird facial expression and act child-like at the same time, it would count twice as they are different criteria. The weird facial expressions would go under the first criteria of the DSM-5 test and acting child-like would go under Dr. Baker's Autistic Formula.

Dr. Baker's Autistic Formula has eight stereotypes that he has identified, yet this study only analyzes six of the stereotypes. The two stereotypes of "Non-Autistic Protagonist" (Any protagonist who is identifiably autistic) and "Identifiably Autistic Character" (The autistic character is shown to be autistic through a representation of a series of symptoms of autism) are not excluded in calculating as every character had to have autism and this is already answered in the DSM-5 test.

The last criterion of the DSM-5 test is very subjective as it is a three level severity scale to rate how much support the character needs to do everyday activities. It can be subjective as it is left to a person's interpretation to determine what their level of support is. As one person can believe someone is a Level 2 or Level 3, even with the same abilities. Level 1 means that the person needs little to no support, and level 3 being needs a substantial amount of support. To address this limitation, this study consulted with an occupational therapist to ask clarifying questions to help this study determine what level each character would fall under.

Some of the limitations derive from the method in general as it was only a random sample of the movies and there are many more movies out there that will have different results. These were also just the movies I found on

Google after going through multiple different websites and creating a list of all the movies that passed the requirements. This list was later randomly generated to select the five movies examined in this study.

To address the limitation of guided codes, each movie was watched multiple times to see if this study would be able to catch more frequencies during the analysis. This research is important as no other published paper uses both the DSM-5 Test and Dr. Baker’s Autistic formula in a direct content analysis in multiple films. Utilizing the DSM-5 test allows this study to use codes that show symptoms and actual experiences people with autism are actively facing. Dr. Baker’s Autistic Formula allows this study to use codes previously developed through another researcher, who even has a son with autism, to analyze potential stereotypes and microaggressions within films with the autistic community featured. This study will also examine five movies in order to still be feasible. The five movies selected were the *Story of Luke* (2012), *Jack of Red Hearts* (2015), *Nathan’s Kingdom* (2018), *Please Stand By* (2017), and *Mozart and the Whale* (2005). Analyzing multiple films over just one film is also important as results that accurately represent the film industry cannot just focus on one film.

## Results

**Table 3.** Dr. Baker’s Autistic Formula frequencies. This table shows all the frequencies of all six stereotypes in Dr. Baker’s “Autistic Formula” in the five movies examined.

Name of the movie	Quirky/Cute Qualities	Depicting reliance on Caregivers	Savant/Super-human Skills	Separation from Support System	Endanger Character	Saved by “hero”
<i>The Story of Luke</i>	88	4	5	5	5	2
<i>Jack of Red Hearts</i>	13	6	0	4	3	2
<i>Nathan’s Kingdom</i>	17	7	0	2	2	1
<i>Please Stand By</i>	15	3	1	2	3	6
<i>Mozart and the Whale</i>	24	0	11	1	0	0

Two of the five movies had all the stereotypes, highlighting a strong presence of stereotypes that may be offensive to the autistic community. Two of the remaining three were only one away from having all the stereotypes, which still highlights a strong presence of stereotypes. The last of the five movies had only three of the six stereotypes, which highlights a mild presence. With such strong presence in four of the five movies, it highlights potential problems in how the film industry portrays characters with autism. In all five movies, quirky/cute frequencies had the highest number, showing a prevalence of “child-like innocence” in main characters with autism. This “child-like innocence” may be viewed as harmful as it belittles those with autism to little children, while many people with autism are able to live on their own.

**Table 4.** Dr. Baker’s Autistic Formula duration (in seconds). This table shows all the durations (in seconds) of all six stereotypes in Dr. Baker’s “Autistic Formula” in the five movies examined.

Name of the movie	Quirky/cute Qualities	Depicting reliance on caregivers	Savant/Superhuman	Separation from Support System	Endanger Character	Saved by hero
<i>The Story of Luke</i>	457	321	74	581	451	232
<i>Jack of Red Hearts</i>	356	544	0	99	207	98
<i>Nathan’s Kingdom</i>	271	473	0	97	97	45
<i>Please Stand By</i>	209	292	45	41	94	438
<i>Mozart and the Whale</i>	452	0	240	0	0	0

Even though Table 2 shows that quirky/cute qualities have the highest frequencies, it is not the highest in duration for stereotypes. This highlights the importance of looking at both duration and frequency as although quirky and cute qualities may have higher frequencies, they are mostly shown in subtle and faster instances that take a couple for seconds of screen time, while a scene where a character is being separated from their support system may take a few minutes if not more.

**Table 5.** Percentage of the Movie in Devoted to Each Stereotype in Dr. Baker’s “Autistic Formula. This table shows all the percentage of each movie devoted to each of the six stereotypes in Dr. Baker’s “Autistic Formula” in the five movies examined.

Name of the movie	Quirky/cute Qualities	Depicting reliance on caregivers	Savant/Superhuman	Separation from Support System	Endanger Character	Saved by hero
<i>The Story of Luke</i>	7.9%	5.6%	1.3%	10.1%	7.9%	4.04%
<i>Jack of Red Hearts</i>	5.8%	8.9%	0%	1.6%	3.4%	1.6%
<i>Nathan’s Kingdom</i>	4.8%	8.5%	0%	1.7%	1.7%	0.8%
<i>Please Stand By</i>	3.8%	5.2%	0.8%	0.7%	1.7%	7.9%
<i>Mozart and the Whale</i>	8%	0%	4.2%	0%	0%	0%



The highest percentages were overall in quirky/cute qualities and depicting reliance on caregivers (which contrasts with the results of the severity scale). Also shows that overall, the movie with the savant had less screen time devoted to stereotypes overall. If you add all the percentages from *Mozart and the Whale*, it is only 12.2%, while other movies have much higher percentages such as *The Story of Luke* at 36.84% and *Jack of Red Hearts* at 21.3% of the movies dedicated to stereotypes. Highlighting that even though savants are one of the most studied stereotypes that the autistic community has spoken out multiple times on, there is a possibility that these movies have lower amounts of stereotypes overall.

Before analyzing the results further, it is important to note that the plot lines may strongly contribute to the amount of the frequencies and durations. In *The Story of Luke*, after Luke loses his grandmother who took care of him his entire life, he tries to find more ways to be independent such as finding a girlfriend and getting a new job while being separated from his support system multiple times throughout his journey for independence. This affects the “Separation from a Support System” category in Dr. Baker’s Autistic Formula. In *Jack of Red Hearts*, Jackie after being in legal trouble and foster care with her sister tries to find a job and ends up fabricating her credentials to get a job taking care of Glory, a 11-year-old autistic girl, who is much more severe on the spectrum, contributing to very high frequencies in the DSM-5 test. In *Nathan’s Kingdom*, Nathan is a 25-year-old autistic man and his sister, who is struggling with an opioid addiction, are on a journey to find an imaginary kingdom. This led to higher frequencies on “Depicting Reliance on a Caregiver.” In *Please Stand By*, Wendy, who loves Star-Trek, leaves her assisted home for people with disabilities to take a trip to Paramount Pictures in order to deliver her manuscript for a contest. Taking this whole trip by herself is an enormous factor of why the frequency and durations in “Reliance on a Caregiver” is much lower as she spends much less time with her caregivers. In *Mozart and the Whale*, Donald Morton is a diagnosed savant who is the leader of a support group for others with autism while finding love with another savant named Isabelle. Since the main character was a diagnosed savant, this would contribute to why this movie has larger numbers in the “Savant/Superhuman” category.

Within analyzing the five movies, there were many patterns developed determining whether the film industry is accurately representing people with disabilities. In all five movies that were randomly generated, only one of the movies contained a savant, which already can be an ableist trope used in movies. This movie, *Mozart and the Whale*, only had 4.2% of the movie dedicated to the main character Donald’s savant abilities yet one limitation to this is there were other characters in the movies who were savants. The other characters’ savant abilities were not calculated in this study as this study only focuses on the main character from each film. The other four movies I was able to examine many movies that did not contain savants. Yet one pattern noticed in two of the remaining four movies, was although they were not savants, they exhibited traits of savants were they excelled or obsessed over a random talent (Table 3). In the *Story of Luke* for example, Luke was able to recall even a single episode of a cooking show and just by taking a bite out of food, he was able to tell what ingredient was needed to perfect the dish. This could still potentially portray savant activities in a negative light. Yet in both of these movies, the percentage of savant abilities in the movie was only 1.3% (*The Story of Luke*) and 0.8% (*Please Stand By*) (Table 5). This shows that generally that although being a savant is identified as a trope, in all three movies, they had a generally low percentage of the movie dedicated to the trope.

In the movie *Mozart and the Whale* (the only movie with a savant), they only portrayed two of the six stereotypes (Savant/Superhuman and Quirky/Cute) in Dr. Baker’s “Autistic Formula” (Table 1) potentially shows that already savants are overused and a stereotype, it could potentially mean that other stereotypes will be less present in movies.

The stereotype with the most frequencies in all movies was cute and quirky qualities, yet the amount in each movie strongly varied between 13 and 88 (Table 3). The actual percentage of the movie dedicated to cute and quirky qualities ranged from 3.8% to 8%, with the mean of all the percentages being 6.06% (Table 5). This shows that this is more of the more prevalent stereotypical behavior of autistic characters within film. This could be interpreted as differences in the movie’s goals or genres as movies with the least number of frequencies could have just wanted to slide



jokes using the character’s “child-like” innocence where movies like *The Story of Luke* with 88 frequencies (Table 3) may have been more of a comedy movie.

**Table 6.** DSM-5 Fourth Criterion. This table shows the severity level of each protagonist in the five movies. Level 1 is little assistance needed and Level 3 means that the protagonist requires much more assistance.

Name of Movie	Number on Severity Scale	Reasoning
<i>The Story of Luke</i>	Level 1	The protagonist Luke is able to take public transportation by himself and perform activities at his job without mandatory supervision. Although his family does not want them to perform these activities in the beginning of the movie, it does not change the fact that he can still perform these activities without support.
<i>Jack of Red Hearts</i>	Level 3	Glory, an 11-year-old autistic girl, needs assistance in her everyday activities, which is why her mother hires Jackie. Jackie helps Glory in basic activities such as changing her clothes, eating, and passing her interview at a new selective school in their area. It is also important to note that this may be due to Glory’s young age and her not getting early intervention.
<i>Nathan’s Kingdom</i>	Level 2	Nathan, a 25-year-old autistic male, deeply relies on his non-autistic sister to go about his everyday activities, but this is a mutually beneficial relationship as he also helps her with her addiction.
<i>Please Stand By</i>	Level 1	Although Wendy lives in an assisted home, she is able to do everyday activities all by herself such as walking to her job at Cinnabon and writing manuscripts.
<i>Mozart and the Whale</i>	Level 1	The main protagonist, Donald, is able to perform everyday activities, live by himself, drive a taxi, and lead a support group with others with disabilities.

There were characters in all three levels found in the severity scale. There was one character of both Level 2 and 3, and three out of five main characters were Level 1. This shows that many of these characters at least had the ability to live independently. This shows that most characters in the movies handle most situations independently with very little assistance, contradicting one Dr. Baker’s stereotypes “Depicting Reliance on a Caregiver ” as although many may have a primary caregiver that takes care of them, characters like Wendy in *Please Stand By* was able to take a whole trip to Paramount Pictures by herself by walking and taking public transportation.

In three of the five movies, the main protagonist was found rated a Level 1 on the severity subjunctive scale (Table 6) where Level 1 requires minimal support for everyday activities and Level 3 requires a lot of support for everyday activities, which in turn affect the depicting reliance on caregivers criterion. In two of the three movies with minimal support needed, these characters still had caregivers as either extra support or to strictly limit their schedule and activities.

Only one movie’s character received a 3 on the severity scale (Table 6) due her age could have also strongly affected this score as she was the only child main protagonist in all five movies. Over time, she might be able to have a lot more independence as throughout the movie she continued to grow and started to learn to eat by herself.

The third criterion was not as prevalent in this research as since four of the five characters (Table 6) were already adults, the frequencies and duration came from flashbacks of their childhood. This reveals that most of these movies displayed the characters in their adult life in these movies, yet even with most of these movies being in the main character’s adult life, there were still high frequencies in the “Quirky/Cute Qualities” section of Dr. Baker’s Autistic Formula (Table 3). This shows how even though most of the characters were in their adulthood, the characters with autism portrayed a child-like innocence.

**Table 7.** DSM-5 Test Frequencies

This table shows all the frequencies of the criterions of the DSM-5 test that were found in each of the five movies.

Name of Movie	First Criterion	Second Criterion	Third Criterion
<i>Story of Luke</i>	104	18	1
<i>Jack of Red Hearts</i>	49	85	0
<i>Nathan’s Kingdom</i>	52	43	1
<i>Please Stand By</i>	26	8	1
<i>Mozart and the Whale</i>	30	11	1

Four of the five movies had more frequencies in the first criterion while the other movie had more frequencies in the second criterion. Highlighting that first criterion may be heavily used more than the second criterion of the DSM-5 tests. The first criterion really focuses more on physical appearances such as facial expressions and body posture while the second criterion is more behavioral such as sensory inputs, attraction to texture, and repetitive behaviors. The first criterion can also be behavioral as it can also deal with socio-emotional reciprocities with others while the second criterion does not deal as much with interactions with others. The third criterion only had zero to one frequencies in all five movies, showing it is not as prevalent in movies and not really used a lot in films.

**Table 8.** DSM-5 Test durations (in seconds)

This table shows all the duration (in seconds) of the criterions of the DSM-5 test that were found in each of the five movies.

Name of Movie	First Criterion	Second Criterion	Third Criterion
<i>The Story of Luke</i>	1768	289	37
<i>Jack of Red Hearts</i>	797	1407	0
<i>Nathan’s Kingdom</i>	689	753	43
<i>Please Stand By</i>	1032	274	105
<i>Mozart and the Whale</i>	1436	288	24

Three of the five movies' largest durations in the DSM-5 test were in the first criterion while the other two largest durations were in the second criterion. This shows an almost even balance between criteria. Showing that although the symptoms in the first criterion may appear more frequently, both criteria have a similar number of seconds on the screen. The third criterion had very few to little occurrences or duration.

**Table 9.** Percentage of the Movie Devoted to Each Criterion in the DSM-5 test.

This table shows all the percentages of the movies devoted to each criterion of the DSM-5 test that were found in each of the five movies.

Name of Movie	First Criterion	Second Criterion	Third Criterion
<i>The Story of Luke</i>	30.8%	5.03%	0.6%
<i>Jack of Red Hearts</i>	12.9%	22.9%	0%
<i>Nathan's Kingdom</i>	12.3%	13.5%	0.7%
<i>Please Stand By</i>	18.5%	4.9%	1.9%
<i>Mozart and the Whale</i>	25.4%	5.1%	0.4%

The highest percentages are mixed between the first and second criterion, while the third criterion has relatively low percentages as most of the scenes included in the third criterion were just flashbacks. This highlights that symptoms that people with autism have are being used within the films, with some of the criteria going up to 20-30% of the entire movie. With large percentages such as 30.8% (*The Story of Luke*), there is no doubt that symptoms that people with autism actually face are being incorporated in these movies as well as stereotypes as shown in Tables 3 to 5.

In all of the movies, there were more frequencies in the DSM-5 test than Dr. Baker's Autistic Formula (Table 3/Table 7). Yet an important limitation to this is that with many of the stereotypes, it is hard for them to happen many times in the movies. For example, if the support system died or was sent to a nursery home, these events can typically happen once, so it is important to look at duration. With duration, two of the five movies (*Story of Luke and Nathan's Kingdom*) have more duration in Dr. Baker's Autistic Formula (Table 8). With three out of the five movies (*Jack of Hearts, Mozart and the Whale, and Please Stand By*) having more frequencies in the DSM-5 test (Table 7). So, this data lies more in-between.

The percentages in the criteria of the DSM-5 test were also generally larger than the percentages of an individual stereotype in each movie, yet this could be due to the fact that they are just examining two completely different subjects. The range for the first criterion of the DSM-5 test was from 12.3% to 30.8%, with a mean of 19.98% (Table 9). The range for the second criterion was 5.03% to 22.9%, with a mean of 10.29% (Table 9). The third criterion had a range of 0% to 1.9%, with a mean of 0.72% (Table 9). The third criterion was most likely lower as all the characters were much older than eight years old, and this criterion is focused on showing the symptoms within the first and second criterion in their early childhood (specifically less than eight years old). Overall, the most prevalent criterion of the DSM-5 test within the five movies was the first criterion as the mean difference between the first and second criterion was 9.69%.

Out of the five movies, two of them had all six stereotypes that were examined in Dr. Baker's Autistic Formula, and two of them had five out of the six stereotypes (Table 7). This shows that the stereotypes identified by Dr. Baker are extremely prevalent within the selected films.

Based on these findings, another potential problem that may be found in the film industry is an overuse of certain symptoms. It is clear that symptoms and experiences that face people with disabilities are used, but to what extent it is acceptable. Many of the characters heavily used unusual facial expressions or body posture (found in the first criterion of the DSM-5 test) for most of their time on screen. Autism is a spectrum and to have the same symptoms for the characters in the movies, narrows the audience's interpretation of that spectrum. With such large percentages such as 30.8% for just the first criterion of the DSM-5 Test (Table 7), it increases the importance of this question being further examined.

## Implication of Results

With these results, there is evidence that Dr. Baker's work has many of the tropes and stereotypes that were strongly prevalent in films as two of the five movies had all six stereotypes. Even though these stereotypes were prevalent, the film industry also clearly incorporated symptoms from the DSM-5 test, which highlights and supplies evidence to the argument that there is a potential over-use of symptoms and perhaps limiting how the audience views autism as a spectrum. Although these symptoms are used to show that the character is autistic, having the character portrayed so many of the same symptoms may affect dome's perception that autism is a spectrum. An overuse of symptoms with high percentages of the DSM-5 Test may affect the audience's perception that someone with autism is typically doing behaviors that tie them to their diagnosis of "autism" when in reality, there are many moments in their life that they do anything a "typical" person would do and not have deficits in behavior (weird facial expressions and repetitive behaviors) . This ties in from the results of Prochnow where they have over-exaggerated certain symptoms to be more inclusive, yet are still not being as representative as they should be (Prochnow, 2014). Having too many symptoms from the DSM-5 test can be more harmful than helpful. This then can lead to inaccurate or unreflective representation of the autistic community.

Social media stigmatization of those with autism have already found correlations with lower mental health that if film representation continues to include tropes and stereotypes, it may be viewed as stigmatizing, and many have similar results (although this question is not examined in this study) such a correlation in lower mental health (Soeffer, 2022).

## Limitations

With this in mind, it is clear that although the film industry is incorporating real-life experiences of people with autism, when it comes to utilizing symptoms from the DSM-5 test, this does not mean that there is not room for improvement. Of course, there are clear limitations to this study that must be addressed as this was only a sample of five movies. Every movie will have different frequencies and results, and these are just the results for five movies, meaning different movies could have higher or lower percentages, frequencies, or duration. This is why it was important that these movies were randomly generated. Again, there was also only one researcher calculating the results, so the results were different according to who analyzes even the same five movies. This study was only focused on the main characters, which means there were no supporting role characters examined. So, the frequencies and other results may have been larger if it included all autistic characters within the movie. This research also only applies also to movies made in the United States and it did not examine movies outside of the United States, meaning that movies outside of the United States could have different results regarding autistic film representation.

## Future Research

This study could be used to guide further research of film representation of autistic characters as future researchers could potentially analyze other movies to see if their results differ as this research study only analyzed five movies,

yet there are plenty of other movies that have autistic characters. As this is the only study currently that uses both the DSM-5 test and Dr. Baker's Autistic Formula in multiple different films, it would be interesting to apply the procedure to other movies.

Due to the fact that ableism, discrimination against people with disabilities, is a global problem that affects all countries around the world, further research could potentially explore how other countries are portraying characters that have autism. This study only focused on movies produced in the United States, yet research surrounding the portrayal of other characters with autism in other countries to compare and contrast may also be beneficial in examining the portrayal of people with autism in movies.

This research also raises a new question that should be further examined as to what extent the film industry should use symptoms from the DSM-5 test and when do the amount of symptoms in a character become too much (Prochnow, 2014).

With the prevalence of stereotypes found in this research study, it may also be important to explore the correlation between stigmatization and stereotypes used in the film industry and the effects on those with autism as this is an important underlying question that needs to be addressed to fully understand the importance of film representation. It would be important to note if stigmatization in film has similar results to stigmatization in social media for people with autism.

## Conclusion

Overall, one can conclude that the film industry is incorporating real life experiences of those with autism although it raises the question of to what extent should these symptoms in the DSM-5 Test be used in comparison to the screen time of the character. One possible conclusion that can be drawn is the film industry is actively working towards being more inclusive of characters with autism, yet due to these efforts, they are actually over-using symptoms found in the DSM-5 test (Prochnow, 2014). Although they are reflecting on their real-life symptoms, it is important to also keep notes of the prevalence of the stereotypes in Dr. Baker's "Autistic Formula" as in most of the 5 movies there almost all 6 stereotypes identified which are found offensive or over-used to the autistic community, highlighting that there is still room for improvement.

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