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Araştırma Makalesi

PERCEPTION OF ANIME CARTOON CHARACTERS DEPENDING ON THEIR VISUAL TRAITS AND FACIAL FEATURES

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Abstract[1]

Even though the usage of computer-animated figures in anime with their visual traits and facial features has been a research topic, there is no research on how these characters' appearances affect their general perception. This study aims to investigate how these characters' visual appearances affect and how their acts are perceived by people who don't have anime literacy but have visual graphic design knowledge. If these visual texts are to justify their status as stories, readers have to look for and construct such 'actants' and 'existents' from the resources generic comics provide. A qualitative approach based on an interpretive paradigm with inductive reasoning has been used as the major methodology for obtaining information to understand how these visual texts justify their status. To reach this aim perception analysis has been used as a method, four images of cartoon characters have been shown to one hundred and fifty-six participants and open-ended short answer questions have been asked about them. This study was applied to people who were unfamiliar with selected Japanese anime characters, had a visual design background, and could not easily read coded expressions. Additionally, two separate focus group studies were conducted on twenty-four Digital Game Design students to obtain additional opinions from Digital Game Design students. It has been found that people's perceptions are shaped by their personal

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experiences. It was concluded that even if they know the basic visual design elements, they may misinterpret the visual features and facial features of anime characters if they do not have anime literacy in their perception.

***Keywords**: Anime Cartoon Characters, Anime Literacy, Facial Features, Perception, Visual Traits.*

ANİME ÇİZGİ FİLM KARAKTERLERİNİN GÖRSEL ÖZELLİKLERİNE VE YÜZ ÖZELLİKLERİNE GÖRE ALGILANMASI

Öz

Bilgisayar animasyonlu figürlerin görsel özellikleri ve yüz özellikleriyle animelerde kullanımı bir süredir araştırma konusu olmasına rağmen, bu karakterlerin görünüşlerinin genel algıyı nasıl etkilediğine dair bir araştırma bulunmuyor. Bu çalışma, bu karakterlerin görsel görünümlerinin nasıl etkilediğini ve eylemlerinin, anime okuryazarlığı olmayan ama görsel grafik tasarım bilgisi olan kişiler tarafından nasıl algılandığını araştırmayı amaçlamaktadır. Eğer bu görsel metinler hikaye olarak vermek istedikleri anlamı haklı çıkaracaksa, okuyucuların bu tür 'aktörleri' ve 'varoluşları' genel çizgi romanların sağladığı kaynaklardan araması ve oluşturması gerekir. Bu görsel metinlerin genel izleyici tarafından nasıl algılandığını anlamak için, bilgi edinmede ana metodoloji olarak tümevarımsal akıl yürütme ile yorumlayıcı bir paradigmaya dayanan niteliksel bir yaklaşım kullanılmıştır. Bu amaca ulaşmak için yöntem olarak algı analizi kullanılmış, yüz kırk dokuz katılımcıya dört adet anime karakteri görseli gösterilmiş ve bunlarla ilgili açık uçlu kısa cevaplı sorular sorulmuştur. Bu çalışma, seçilmiş Japon anime karakterlerine aşina olmayan, görsel tasarım geçmişi olan, kodlanmış ifadeleri kolayca okuyamayan kişilere uygulanmıştır. Ayrıca Dijital Oyun Tasarımı öğrencilerinden ek görüşler almak amacıyla yirmi dört Dijital Oyun Tasarımı öğrencisi üzerinde iki ayrı odak grup çalışması yürütülmüştür. İnsanların algılarının kişisel deneyimleriyle şekillendiği tespit edilmiştir. Temel görsel tasarım unsurlarını bilseler bile, eğer algılarında anime okuryazarlığı yoksa anime karakterlerinin görsel özelliklerini ve yüz özelliklerini yanlış yorum yapabilecekleri sonucuna varılmıştır.

***Anahtar Sözcükler:** Anime Çizgi Film Karakterleri, Anime Okuryazarlığı, Yüz Özellikleri, Algı, Görsel Özellikler.*

INTRODUCTION

Manga has had a supreme rise in popularity worldwide in the twenty-first century (Technavio, 2024). As technology expands the diffusion of information and culture across borders in recent decades, which is called global information society, has become bigger and due to this the knowledge of manga and anime is a lot easier to discover and reach. "Manga (Japanese comics) are appealing and accessible to high school and college students who sometimes pursue an avid interest and go on to become independent learners in the world of Japanese popular culture. With an abundance of manga volumes published in English translation over the past decade, librarians and teachers can exploit these works to engage students in developing

information literacy skills that will be useful across the curriculum and beyond" (Donovan, 2008). Anime is typically derived from manga, which are Japanese comic books. However, it is not always necessary for there to be a manga counterpart. Other sources such as light novels, visual novels, games, or original stories can also serve as the basis for an anime.

In Japan or close cultures where people are familiar with Japanese pop culture, these codified expressions can easily be read because of high exposure. Facial expressions in manga and anime are often very stylized and sometimes almost symbolic; individuals who know how to read them and have manga and anime literacy can without hesitation interpret the expressions they see and make inferences about the characters' emotions. For those who don't have anime literacy, it is difficult to read without prior knowledge or experience.

A unique Anime Cartoon Character (ACC) is a character with exaggerated features. This research uses the term ACC instead of Anime Characters (AC) since most anime nowadays have live-action adaptations where the anime cartoon characters are now played by real human actors, examples of these can be the new live-action series for the anime OnePiece or Avatar: The Last AirBender. Both are currently getting additional seasons and are ongoing shows that are available to view on Netflix, the popular streaming platform. They are often based on realistic humans but have over-the-top and expressive features. Even as it is technologically feasible, realistic characters are made to closely resemble reality, this is done so people watching can still have some human connection to the characters. There is currently no research on how people perceive the characteristics and facial expressions of ACC.

There has not been any research done about how a cartoon character is perceived depending on its facial features or visual traits. In this research, it has been examined how individuals interpret ACC’s based on their physical appearance and personality attributes. Even while this information can be used to create characters of any kind, it is far simpler to designate a more limited field for study and comparison than attempting to contrast characters created differently in real life. This is not to say that the many various applications of ACC’s (in education, movies, video games, etc.) cannot be compared; nevertheless, for the sake of simplicity, only well-known characters from well-known anime series were examined. This study has focused on how an ACC's appearance, personality, and qualities affect how others perceive them. The characters' styles are distinctive and identify similarities between them.

LITERATURE REVIEW

A Brief Introduction to Manga and Anime

Manga according to Brenner (2007) is the general word for Japanese printed comics, similar to comic books and graphic novels in the United States (pronounced mahn-guh with a hard 'g'). But may also come across the phrase manhwa, which is Korean for printed comics (pronounced mahn-hwah). The general name for Japanese animated works, which includes television series, motion pictures, and direct-to-video releases, is anime (pronounced ah-nee-may).

Another way anime is described by Steele (2022) is anime, derived from the Japanese term 'Animeeshon,' which is a loanword that encompasses all types of animation across the globe. Anime is a term used in the United States and other countries to refer to a distinct visual style of animation originating from Japan. A prevalent fallacy when discussing anime is the belief that it is a distinct genre of media. Indeed, anime is a multifaceted medium encompassing a wide range of genres and visual styles. The term 'medium' is employed in the context of art to denote any fundamental elements or 'mode of expression' utilized in an artistic or creative endeavor (Zanello, 2021). Anime is sometimes described as a distinct 'limited animation' style by experts and insiders in the business. This style, which has been made famous by Japanese animation companies, is known for its unique visual characteristics (Rich, 2015). Anime is a form of animation that originated in Japan and is known for its vivid and dynamic visuals, frequently including vibrant characters and action-packed storylines with fantastical or futuristic elements (Dictionary.com n.d.).

Mio, (2010) explains that manga and anime deftly combine aspects of familiarity and diversity, bridging the gap between local and foreign cultures and classic and current topics on several levels. Through a variety of techniques, from intricate visual styles to the creation of captivating but thought-provoking tales, they have demonstrated their originality and versatility over time. This continuing process of fusing various inspirations and inventive breakthroughs is formed by the active involvement of enthusiasts, readers, and amateur artists as well as industry influencers like editors and distributors. As Western comic art and Japanese artistic traditions meet, hybrid forms such as manga and anime are created. Exposure to Western-produced publications in Japan during the late 1800s led Japanese artists to new methods, including speech balloon styles and framing for temporal or geographical delineation. Western influence was evident in magazine social and political satire, which had a long-lasting effect on Japanese artists. Japanese translations and publications of Western comics, especially those from North America, had a significant impact on Japanese comic art in the early 20th century.

Features and Traits of ACC's

Since anime is still a growing sector (Elad, 2023), any new or more conclusive facts can prompt more complex inquiries regarding how this industry can enhance computer-animated character emotions. Before more complex questions can be addressed, the fundamental ones must first be addressed.

Before character designers start developing characters, they must first create a character from scratch. Starting with preliminary sketches on paper or digital sketches on the computer is typically the process that is used. After perfecting the main postures, the animator will then put up the key frames in a 3D program using these as references (J. Lasseter, 1987). The "personality" of a character is what drives its actions when creating the essential poses. It is important to show how a character thinks through its actions (Bates, 1994). This forges a close bond between the character and the spectator by making the character seem alive and almost lifelike in behavior. This connection fosters the empathy that the viewer needs to empathize with the character on screen (Johnston & Thomas, 1984; J. Lasseter, 1987). Additionally, anime artists use common or stereotypical visual symbols to accurately convey what their character is experiencing. Brenner suggests that a creative has the option to exclude commonly used distortions in emotional expression in order to preserve the integrity of their work. However, it is seen that many artists still utilize these strategies, even in the midst of sensational situations. Creators employ variations in perspective to effectively convey concepts rapidly (Brenner, 2007). Examples of this can be the following: The presence of sweat drops indicates a state of anxiousness,

- Pulsing vein near forehead = anger
- Blush = ashamed,
- Prominent canine tooth denotes animalistic conduct, losing control, Dog ears/tail = begging,
- Drool = leering,
- Ghost drifting away from the body = fainting,
- Snot bubble = asleep,
- Shadow across face = great fury,
- Glowing eyes = extreme glare,
- Nosebleed = stimulated,
- Ice/snow = on the receiving end of frigid or nasty actions,
- Chibi/super-deformed character = intense emotional condition (Brenner, 2007).

Arshad and Kim (2020) explored the relation between the aesthetic design of the characters and visual perception factors that affect emotions such as empathy, and pleasantness among Malaysian audiences. Again, Takagi and Terada (2021) worked on the emotions in which they focused on the effect of anime characters' facial expressions and eye blinking on donation behavior to the feelings expressed by changes in the shape of the facial parts contributed to eliciting a higher donation amount. The study by Ge and Chen (2023) titled 'How does the character's visual design help convey the character's background in Genshin Impact?' examined the relationship between the visual design of characters in the video game Genshin Impact and their character background. To do that they have carried out a formal analysis to collect data on selected characters' color choices, shapes, movements, facial expressions, and backstories to analyze if the characters' visual designs align with their narratives. Unless you are experienced in the anime field you would not understand these factors. The analysis revealed notable strengths in employing a skillful combination of color, shapes, movements, and facial expressions to evoke specific emotions, accentuate character traits, and enhance the storytelling experience. Knowledge of anime literacy can assist in evaluating and understanding these expressions. In another study, Lasseter (2021) created a unique anime character, presented it to participants, and tried to provide a model for how a person of one ethnicity can create an authentic character of a different ethnicity.

Stylized and Realistic Anime Cartoon Characters

In most Anime shows a realistic anime character closely resembles reality, frequently using photorealistic approaches. In 3D animation or when animation using CGI is present motion capture technology is used to capture motion easier. Realistic character animation typically employs motion capture technology. The proportions of a character's body should match those of a real human being if being used realistically, the proportions can also change depending on the style of design used, even if the character is realistic it can have exaggerated features, an example of this can be the characters from Dragon Ball Z where characters like Goku (Dragon Ball Wiki, 2024a) and Vegeta (Dragon Ball Wiki, 2024b), which are the main characters of the show have over exaggerated hair normally and when powered up, their body style also changes depending of the power up level. When a character is stylized, a particular artistic approach is used to create a caricature of the character rather than a genuine one (Maestri, 2006). Exaggeration is common with styled characters, and a character designer effectively invents their reality when designing a stylized character, which may or may not take various liberties with actual reality. Character designers have a far greater creative license when creating stylized characters since they can alter the proportions and movements from what would be realistic for a human. For instance, depending on the anime, stylized characters frequently have larger heads compared to their bodies because the face conveys a lot about a character's personality or mood; therefore, the larger the head and face, the more area there is to express information (Maestri, 2006), but this is not always a feature that is used in anime alone, American animation series such as 'Hey Arnold'

have characters that have both stylized and realistic style characters, the main character 'Arnold Phillip Shortman' (Hey Arnold Wiki, 2024) is an example of this. Exaggeration is frequent with stylized characters, and a character designer effectively invents their reality when designing a stylized character, which may or may not take various liberties with actual reality. As opposed to what would be realistic for a human, stylized characters enable a character designer considerably more creative freedom in how the character is designed and how it moves. For instance, stylized characters frequently have larger heads than their bodies since a character's face conveys a lot about their personality or mood, so the larger the head and face, the more area there is to communicate information (Maestri, 2006). In Figure 2, two visuals present cartoon characters in a stylized character body style. One should realize how exaggerated the stylized character's head is in proportion to its body; the difference raises questions. In a detour from the realism of human anatomy, the stylized cartoon character's ears are also unusual and don't even resemble an ear.

Realistic Characters

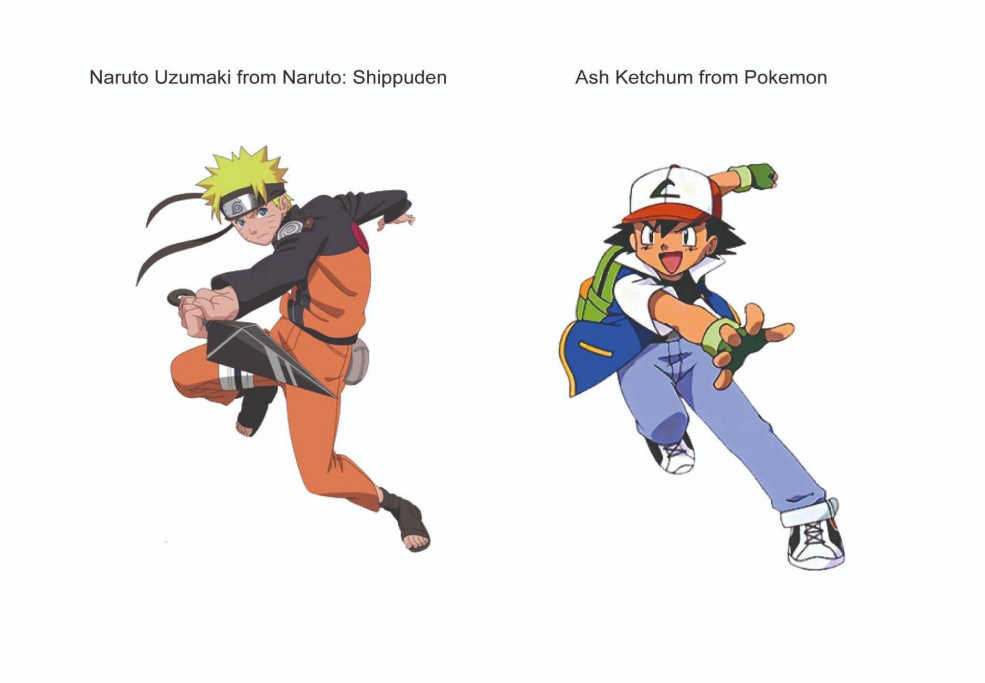
The "Uncanny Valley" idea of Mori is one drawback that a realistic cartoon figure may have (Mori, 2012). According to this notion, there is a limit to how realistic a human character can appear before this limit, known as The Uncanny Valley, is reached. Although Mori originally developed his thesis in 1970 regarding the aesthetics of robots, ACCs can also benefit from it (Mori, 1970). A metal-clad robot is said to have "little resemblance to a human being, and in general, people do not perceive them to be familiar," according to Mori's theory (Mori, 1970). However, if a toy robot's designer prioritizes looks over functionality, the robot can resemble a person in appearance and have a face, two arms, two legs, and a torso. Children can enjoy a sense of familiarity with the humanoid toy because of its design. This sentence can be used to describe ACCs with ease. A character created specifically for the role (main character, side character, protagonist, etc.) won't give the audience a sense of familiarity. If all of the characters were created merely to convey the story's message and not to evoke familiarity and emotion in the spectator, the viewer cannot get the full effect or sensation of the scene. It is uncommon for the designs of characters to vary from the typical humanoid figure since characters are created so that the viewer can feel familiar with them. If the character does, it frequently still has many human characteristics or a range of motion that is like that of humans.

Mori preceded by saying that movement is typically an indication of vitality for creatures, including robots. The eerie valley's shape is altered by movement by highlighting its peaks and valleys. The influence of the movement on the industrial robot is minimal because we consider it to be nothing more than a machine. It simply ceases functioning if it stops moving. But if appropriately programmed to produce humanlike movements, we can experience a certain level of familiarity. The similarity in speed and acceleration is necessary for the movement to resemble human motion. On the other hand, our sense of strangeness increases significantly if

we give a prosthetic hand, which is at the bottom of the uncanny valley, movement (Mori, 1970, p. 34).

This is due to the life-like appearance of the prosthetic arm (Mori, 1970). If a realistic character is present but does not move, it is strange but not terrifying. However, adding movement to a realistic character seems to elicit an uncomfortable or inappropriate feeling from the observer. Animation's ability to convey emotions effectively depends heavily on movement, and it seems that realistic characters frequently struggle in this area. The uncanny valley effect has been validated by others through their research. In one study, for instance, it was discovered that "...the perceptual sensitivity to facial features was higher for real faces than for artificial faces, and the higher sensitivity for real faces produced unpleasant impressions of abnormality while the lower sensitivity for artificial faces did not" (Seyama & Nagayama, 2007, p. 349). Another experiment examined people's reactions to lifelike characters with parts of their faces frozen as they displayed various emotions. Both of this research contribute to the confirmation of the eerie theory's existence and provide evidence that perceptions of uncanniness differ depending on the emotion and whether a face is manufactured or realistic. Due to the greater sensitivity to genuine faces, this would support the idea that a stylized character would be regarded differently than a realistic one, and the emotion itself could influence whatever distinctions the participant perceives. On the premise that the resulting animations can be more credible and engrossing for a spectator, there has been a drive toward realism in cartoon character animation (Wages et al., 2004). If this were the case, then there would not be a stark difference in the number of films featuring realistic and stylized computer-animated characters. Character designers and animators have the option of ignoring or altering the assumptions that come with the selection of a realistic character when developing a non-realistic or stylized character. When realism is not one's goal, one is not constrained by reality's constraints (Nunez, 2004). As long as the animation is done convincingly, a stylized character can do just about anything without worrying the spectator. Consideration should be given to realism in light of the viewer's expectations for that world (Nunez, 2004). In essence, a person has expectations for each character concerning the world they are shown. The standards are far less severe when the universe or character is exaggerated or a caricature. The standards are far less severe when the universe or character is exaggerated or a caricature. The two characters below represent realistic ACC's and point out how they are similar to a real human. Although resembling humanoid creatures, they are stylized in such a way that the anatomies are somewhat altered, faces are fairly simplified, and poses are exaggerated for inspiring and dynamic positions, but this does not raise any concerns about them.

Figure 1: Realistic Anime Cartoon Character Body Style Examples (Heroes Wiki, n.d.-b, n.d.-a)



Stylized Characters

Mauro & Kubovy (1992), claim that often exaggerated representations of, stylized or odd-faced characters are simpler to recall and identify than regular faces. A unique or exaggerated face is much easier for a human spectator to remember, which also supports the argument of why it is much simpler to understand the emotion of a caricature of a character. Because it is overdone, it is simpler to read. A spectator could notice the simplicity of understanding the emotion when contrasting a stylized, exaggerated character with a genuine character. There is no current study that indicates whether or not this is the case.

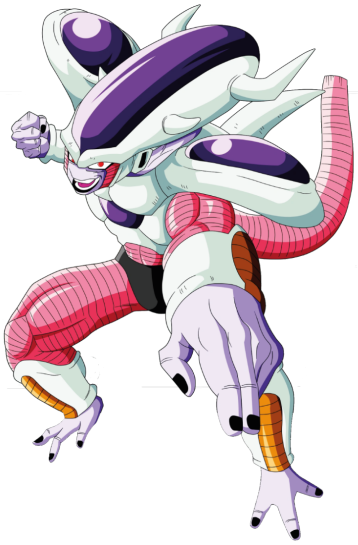
Stylized figures have an advantage over realistic characters due to the ease with which caricatures or other strange faces may be remembered and recognized. Disney is a name that is frequently brought up while discussing animation in its entirety. It should be mentioned that Disney has established twelve guidelines that animators must adhere to create great animation. The tenth of those twelve rules is an exaggeration. Walt Disney and his company's perspective on animation and realism are presented in the book Disney Animation: The Illusion of Life (Thomas & Johnston, 1981). According to the book, Walt's requests for more realism and subsequent criticism of the outcome because it was not overdone enough caused some uncertainty among the animators. There was probably no difference in Walt's mind. Walt sought a parody of realism when he begged for realism (Johnston &

Thomas, 1984, pp. 33–34). Through the practice of caricature, realism is produced in the Disney universe. "The medium of animation lends itself least to real individuals, and most to caricatures and illusions of a person," says Woolie Reither (Johnston & Thomas, 1984, p. 1977). The writers of the book also advise, "In general, it is wise to depict a human character in a story with as much caricature as the role can permit" (Johnston & Thomas, 1984, p. 177). The following figures are an example of stylized cartoon characters.

Figure 2: Stylized Anime Cartoon Character Body Style Examples (Chaos Wiki, n.d.; My Hero Academia Wiki, n.d.)

Ectoplasm from My Hero Academia

Frieza 3rd form from Dragon Ball



Disney advocates for characters to be as stylized as possible which precludes the use of realistic characters. Another industry titan, Pixar, states that to ensure that the plot makes sense, the characters are likable, and the pictures are breath-taking, "only clever (and occasionally non-realistic) creative choices can be made" (Porter & Susman, 2000, p. 29). Exaggeration and caricatures are preferred by two of the most well-known and renowned cartoon character design firms when making a successful film. This is a benefit for stylized characters because these approaches cannot be applied to realistic characters without changing their realism. Disney and Pixar now support stylized characters, and until something changes and the issues these studios have with realistic characters are uncovered and addressed, it is

unlikely that they can abandon their successful policy of utilizing stylized characters in favor of realistic ones.

Another idea associated with stylized characters is that changes to finger motion might change the interpretation of an animated vignette, according to earlier research on the perception of ACCs (Hodgins et al., 2010). The essential point is, if a change in finger movement may alter the meaning of a vignette, what happens when exaggerated smiles or excessively wide eyes are used to create non-realistic humanoid characters? This is something to take into account while developing realistic people. This study of finger movements is comparable to how stylized figures might move their eyebrows. The exaggerated action of drooping eyebrows is something a realistic character cannot perform, so it could disrupt the meaning of the video clip if the character's eyebrows drooped. Therefore, it stands to reason that the inclusion of expressive body parts in stylized characters may help or interfere with the viewer's ability to perceive that emotion. It is impossible to say whether or not the exaggerated or extra body parts are even noticed, let alone if they help the emotion to be expressed, without comparing the two types of figures. There is a study named "Evaluating the emotional content of human motions on real and virtual characters" that contrasted various character designs and examined how viewers interpreted emotions. Six different animated characters were used: a wooden mannequin, a zombie, a toon character, and a motion-captured video of the actor portraying the emotion in both high and low resolutions. Both realistic and stylized characters are present here. Six emotions were captured, and the participants watched the videos in random order. The participants then gave their opinions by rating the feeling's intensity and selecting the appropriate emotion from a selection. The findings showed that captured body motion is excellent at portraying emotion and that a character's physical appearance has no bearing on how emotional motion is perceived (McDonnell et al., 2008). These findings suggest that there shouldn't be any distinction between how the two different character styles interpret body feelings. The uncanny valley, however, contends that there is a literary dilemma since the more realistic a figure becomes, the more eerie it seems. The issue with this study was that it ignored hands and facial features in favor of merely observing body motion. The authors discovered that as long as a realistic motion was used, a reaction of uncanny eeriness did not happen, even when a zombie character model was used, despite the descriptions from the participants saying that it was unpleasant. The scientists speculate that rather than the model's bodily movements, the eerie emotions may be brought on by the face and hand motions (McDonnell et al., 2008, p. 70). There may be a distinction in how cartoon characters are regarded depending on their facial characteristics and other characteristics, and a study comparing these perceptions may reveal whether or not there is a difference.

Emotion is challenging to explain and tough to describe. The concept of emotion and a breakdown of how viewers experience emotion are given in the next section. The study using various character types found no differences in how people perceived how the body was moving, but they blurred out the faces and hands. The

greatest emotional information is displayed on faces. Therefore, a facial expression is probably where a difference might be seen, and it should be investigated to see if character style affects how facial emotion is perceived. The next section is going to explain facial expressions of emotion.

Perception of Facial Emotion

The usual range of facial emotions includes joy, sorrow, surprise, fear, rage, and disgust. To research emotions, diverse facial features can be divided into categories. The areas include those around the lips, eyes, and brows. It should be emphasized that humans are adept at detecting subtle variations in facial motion, and the tiniest perception of an emotion's wrong or ominous motion can cause it to be perceived as such. Humans can also compile a detailed list of all the different facial expressions and their associated meanings. However, "it is still not assured that this facial emotion can be accurately recognized, even if a physically exact virtual human face imitates all spatial and temporal components of facial motion perfectly" (Griesser et al., 2007, p. 12). The industry hasn't yet come up with a name for the additional component that makes an emotion more than just the appropriate move.

There are three different sorts of signals that the face can send. According to Ekman and Friesen, the first is static, which comprises many features of the face that are more or less permanent, such as skin color, shape, and bone structure. The second signal is slow, which includes aging-related changes to the face like wrinkles. Rapid is the third signal, and it involves momentary changes in facial expression brought on by the contraction and extension of facial muscles (Ekman & Friesen, 1975). Most people associate emotion with a rapid signal, or the actual physical movement of the mouth to smile or frown. The viewer's ability to discern the emotion of another person or fictional character depends on all three of these signs.

Rapid signals appear to be the ones that are more likely to be animated wrongly when it comes to computer animation. The first two signals in the model are static and slow, leaving just one signal to be produced and subsequently received. To make the character convincing, it is necessary to understand how different character styles differ. When analyzing stylized figures, the topic of whether the slow and immobile facial signals affect how emotions are perceived is very important. Studying the likelihood that a character's physical appearance (the slow and static signals) affects how those feelings compare to those of other characters would aid designers make better decisions.

Facial behavior is measured and described through the facial action coding system (FACS). Ekman, Friesen, and Hager were responsible for the most recent revision (Ekman et al., 2002). For computer character animators, this approach is useful because it enables a trained observer to dissect an expression into the particular facial movements that make it up and assign it a numerical score that can be used to analyze its constituent parts. This knowledge can be used by an animator to produce the quick signals that make up a character's expression. These signals can

be converted to both realistic and stylized characters, therefore while utilizing this method, the expression should always be the right one for the intended feeling. As the fast signals for a particular emotion should be the same independent of the character's look, this lends support to the hypothesis that changes in how emotions are perceived may be caused by a character's appearance. Understanding how to assess emotional perception and how to interpret the findings are both critical. Seven emotions were used across six distinct animation approaches in one study, which is highly significant in terms of the variables stated and how to measure the perception of emotion. The research described here aims to investigate if participants' perceptions of facial expressions are affected by the visual style of a cartoon character or human-like character (realistic versus stylized).

Each character style has benefits and drawbacks, but the research does not demonstrate how the character style affects how facial emotion is perceived. A study that compared the body movements of several realistic and stylized characters revealed no differences, however, that study ignored the fact that the face is where most emotional information is found. A study comparing the perception of facial emotion expression should be conducted because of the two stylized and realistic characters' dramatically different responses to the slow and static signals that make up facial emotions. This study investigates how cartoon characters are interpreted concerning their facial characteristics or personality traits. To create more popular cartoon characters, animation studios must first determine whether there is a difference and what the participants are observing differently for each style.

METHODOLOGY

Reading manga and anime faces requires a certain literacy. That's why it would be expected that certain groups of people who lack anime literacy couldn't perceive the anime right.

The research question of this study based on the aim of this article is:

RQ: Is there any confusion on the perception of ACCs depending on their visual traits and facial features for more general viewers who are not anime literate?

This question can include the character's head, body, eyes, nose, ears, and facial expression. To find an answer to this research question, qualitative descriptive research has been carried out with an inductive reasoning approach based on an interpretive paradigm and a perception analysis. The researcher can have a deeper grasp of the subject being investigated through descriptive research. According to Maxwell & Mason (2012), the qualitative design enables the creation of new, "based hypotheses about the latter," and the identification of unexpected phenomena and influences. To better grasp new findings and correlations, qualitative research has an innate openness and flexibility that enables you to change your design and focus at any time (Maxwell & Mason, 2012, p. 22). With a qualitative research approach, the

researcher has the freedom to question participants, "What do you see?" as opposed to, "Do you see?". The themes and variables that are being researched must be defined to conduct a quantitative study. This study has used variables from a system for assessing animated facial emotions from earlier research (Wallraven et al., 2008). Following this distinction, the impressions the characters left on themselves as viewers and the reasons for these impressions were discussed with the students. The goal of this research was to identify the perceptions of facial features or personality factors that contribute to this impression on participants. Content analysis has been used to categorize and describe participants' opinions in open-ended short-answer questions.

Participant Population and Measures

Two-stage research was conducted in this study. In the first stage, participants were reached through electronic surveys and asked to answer the research questions. Participants for this study ranged in age from 18 to 50 and were selected with a stratified sampling method from Arkin Creative Arts and Design University (ARUCAD) and online users with similar interests. The main idea behind these age categories to be selected was to understand if there is a difference between the perceptions of different age groups that's why ages are categorized with five-year gaps. In this way, it was possible to consist of both students and lecturers of the university. Besides that, because this university specializes in arts and design, it created a research environment to reach participants with design backgrounds. Furthermore, the Visual Communication Design and Digital Game Design departments have been the main source of the participants in the survey.

In the second stage, a focus group study was conducted on two groups of eleven and fourteen students, who were continuing their education in the Digital Game Design Department and taking the 2D Character Design course at the time the research was conducted. Focus group studies were held on March 6, 2023. In this research, first of all, the characters were shown to the students, and the students who knew the characters and the students who did not know the characters were divided into groups.

The survey included the anime series My Hero Academia and One Punch Man. The selection of both anime was based on the awareness that both of them include characters that would prompt the participants to contemplate their perception of the character and refrain from hastily forming conclusions. The characters chosen for the survey were Saitama from One Punch Man, Eijiro Kirishima from My Hero Academia, Ectoplasm from My Hero Academia, and Garou from One Punch Man. Saitama is a character with a simple nature, but he exhibits a highly aggressive and menacing aura in certain scenes of the anime. Eijiro Kirishima is a student who possesses the ability to harden his skin, giving him a formidable appearance. Ectoplasm, a teacher, can duplicate himself and is often seen wearing a detective coat. He has a tall robotic figure with piercing white eyes and sharp teeth. Lastly, Garou is a muscular character skilled in martial arts, with sharp facial features that

contribute to his dangerous appearance. The reason these four cartoon characters were chosen is because of the nature the characters possessed, (this nature can be their design or features the character had), characters two looked like bad or questionable characters but in reality, the character is a student who is a good hero. It was chosen like this to get a unique and original answer from the participants who were people who had no prior knowledge about the character or topic. When shown a character that looked like a villain because of their features the participants would use their prior knowledge about characters in general to determine their answer, seeing that the character had spiky red hair and sharp teeth would make them question how a hero would have such features but this opinion would depend on the participant's prior knowledge of what a hero is supposed to look like. The second cartoon character used in the survey was Eijiro Kirishima also known as Red Rebel, he is a sixteen-year-old student who can harden his body, when doing so his appearance changes dramatically and he looks sharper and more textured, giving him a very sinister and devious look. This appearance he has can cause some people to assume he is a bad character because he does not look like what a stereotypical hero would look like. For example, a person who grows up watching Superman, he/she would assume a hero is someone who wears bright colors, a cape and has smooth human-like features but when met with a character like Red Rebel, with this perception person would start to assume the opposite. The anime cartoon characters included in the study were mostly from anime series and are very well known (MyAnimeList, 2024; RiNNE, 2022). On the popular anime review website MyAnimeList (2024) One Punch Man is ranked at fourth place and My Hero Academia is ranked sixth place out of fifty top-ranked anime by popularity. In October 2015 One Punch Man was released and at the time was the most-watched anime series, it stayed at this position until January 2016 (RiNNE, 2022). MyAnimeList (2024) shows that One Punch Man has 3,188,035 members and My Hero Academia has 2,995,122 members. According to IMBd (2024b, 2024a). My Hero Academia has twenty-nine wins and forty-four nominations. On the other hand, One Punch Man: Wanpanman is a top-rated TV show #103 and it has three awards wins and nine nominations.

The participants may have seen the ACC before and can recall the circumstances and emotions because the ACC was picked from already-existing animated films and shows. To eliminate the risk of misinterpretations of anime cartoon characters that are known by participants, all of the survey responses were checked and seven participants' answers were removed from the survey to eliminate bias. Ethical approval was obtained from the Ethics Committee of the Arkin University of Creative Arts and Design (2022-2023/001), and written informed consent was obtained from all participants. All participants were over 18 years old, had a background in graphic design from the undergraduate level, and had been taught to recognize design differences and the impact these differences can have. An electronic survey has been carried out on hundred and fifty-sixty participants via Google Forms between the dates 19 January- 09 September 2023. Only a hundred

and forty-nine of them can be accepted as valid participants because seven of them know the characters.

The sequence of the cartoon characters was unpredictable and not done so on purpose. The perception of the cartoon figure as good, negative, or neutral was the first quality to be examined. The second step of the investigation involved asking what characteristics or traits led people to believe that a character was good, bad, or neutral. To filter the information and determine the basis for this assumption using this question. It would be quite evident what specific facial expression or characteristic was the cause of their thinking in this way, and it would provide me with the first evidence of what kind of facial feature or characteristic was causing participants to think in this manner. The third and last question was, "If they could modify one aspect of a cartoon character's appearance or personality, what would it be?" This query would let me know what sort of face characteristic or trait could be altered to influence the participant's perception of the cartoon character. These questions were asked for each of the four characters. The four characters that were in the survey were each subjected to these examinations. Based on their relevance, the survey's traits have been divided into various parts.

Table 1: Demographic Characteristics of Participants

Demographics		**Study Group**
Participants n (%)		149 (100)
Age Categories n (%)		
	18-20	35 (23.5)
	21-25	57 (38.3)
	26-30	24 (16.1)
	31-35	11 (7.4)
	36-40	11 (7.4)
	41-45	5 (3.3)
	46-50	6 (4.0)
Gender n (%)		
	Female	69 (46.3)
	Male	76 (51)
	Other	4 (2.7)

The total number of participants was one hundred and forty-nine with sixty-nine males, seventy-six females, and four others. The respondents who were between the ages of twenty-one and twenty-five showed the greatest interest in the survey. With the age group between eighteen and twenty coming in second.

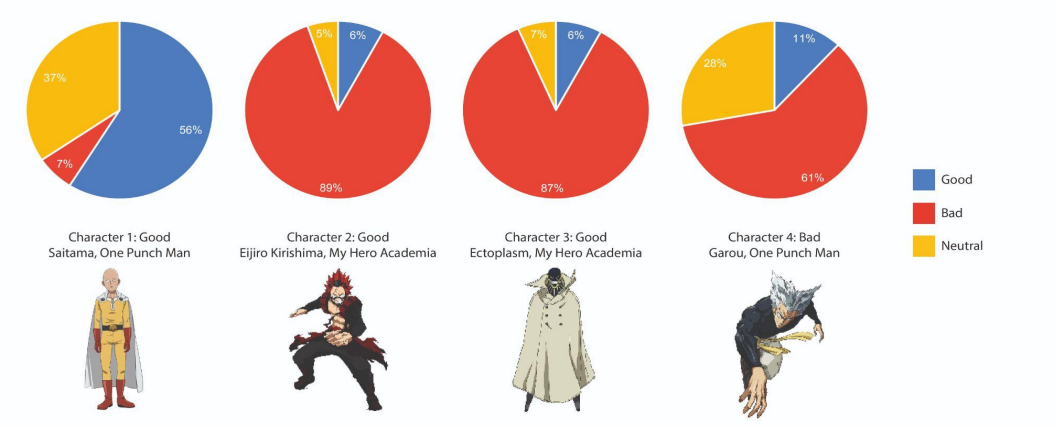
RESULTS AND DISCUSSION

Within the scope of the research, each character was shown to the respondents separately and asked, "Is this character good or bad? Among the three options, respondents marked "Good, Neutral, Bad" as the most appropriate to their opinion. The following pie charts were created according to the research findings.

Table 2: Characteristic Details of ACCs

Character Number	Name of The Anime Series	Name of The Anime	Characteristic Traits	ACC's Style
Character 1	One Punch Man	Saitama	Good	Realistic
Character 2	My Hero Academia	Eijiro Kirishima	Good	Realistic
Character 3	My Hero Academia	Ectoplasm	Good	Stylized
Character 4	One Punch Man	Garou	Bad	Stylized

Graph 1: Do You Think These Characters Are Good Or Bad?



From Characters 1, 2, and 3 ACCs are all good in their movies/shows except character 4. Despite their real roles in animated movies/shows except Character 1, none of the above characters were identified rightly by the participants. In Character I, 56% (n=84) of participants said that it is good, 37% (n=55) of participants stayed neutral on his character appearance and only 7% (n=10) believed that he is bad. Character 2 is good however 89% (n=132) participants said that he is bad, only 6% (n=9) of participants said he is good and 5% (n=8) said neutral. Character 3 is also good, similar to Character 2, 87% (n=130) participants said that this character is bad with 6% (n=9) saying that he is good and 7% (n=10) staying neutral. Character 4 is bad and 61% (n=91) of participants found him bad, 28% (n=41) participants stayed neutral in response and 11% (n=17) found him good. It is much more related to "cognitive bias", implying an implicit prejudice within the individual (Hinton, 2017,

p. 1). It is important to remember here; that these participants are not familiar with anime literacy.

Table 3 displays the results for question two from the survey for all of the four characters, which is are there any specific features or traits that make you think this way? The answers to this question were given in short answers so some answers had multiple opinions. The table created with the content analysis method and categorization of the features has been done according to the common themes in all responses.

Table 3: Specific Features Or Traits Of Characters That Make Participants Think In This Way

Character Traits	Character 1	Character 2	Character 3	Character 4	Total n (%)
Facial Features	45	93	96	76	**310 (43.5)**
Clothing	23	5	39	1	**68 (9.6)**
Facial Expression	22	10	7	12	**51 (7.2)**
Body Expression	12	6	11	15	**44 (6.2)**
Clothing Color	26	2	7	4	**39 (5.5)**
Texture	3	31	3	1	**38 (5.3)**
Hair	10	3	-	24	**37 (5.2)**
Eye Color	-	24	-	13	**37 (5.2)**
Face Shape	7	6	5	13	**31 (4.4)**
Body Color	9	-	17	1	**27 (3.8)**
Hair Color	-	7	-	6	**13 (1.8)**
Body Shape	7	-	-	4	**11 (1.5)**
Body Features	-	-	-	6	**6 (0.8)**
Total	164	187	185	176	**712 (100)**

As it is seen in Table 3 the most important feature is facial features (43.5%, n=310) which have been identified by participants. It has been determined that the visual element that affects the participants of the research in deciding whether anime characters are good or bad characters is by far the facial features. This means that eye shape, tooth shape, and facial features are generally factors that affect people's perception at first glance. Second is clothing (9.6%, n=68). According to Table 3, especially Character 1's and Character 3's clothes affect participants' answers. Although Character 1 is in realistic ACCs style, his clothing seems heroic with a cloak. In addition to that, Character 3's clothing affects more than one-fourth (39/ 149) of participants who evaluated Character 3 based on characteristic traits. The

third place is taken by facial expression (7.2%, n=51). Especially Character 1 was impressive in this trait. The fourth important aspect in features has been detected as body expression (6.2%, n=44). The fifth effective feature is clothing color (5.5%, n=39). Another hidden result in Table 3 is color. Clothing, eye, body, and hair colors affect participants' perception of ACCs as good or bad. Mainly Character 2 affects participants' answers to these character traits. These results provide animators and designers of cartoon characters with the knowledge they need to improve their creative decisions and increase the impact of their characters. These findings can help animators and character designers determine what types of facial characteristics or traits to use by demonstrating any variations in how people perceive certain qualities and features of cartoon characters.

Visual Traits and/ or Facial Features Affect Audiences' Perception

Figure 4 shows the results for this question: "If you could remove a facial feature or visual trait from this character, would it change your mind?"

Graph 2: Features or Traits Effects On Audiences' Perception

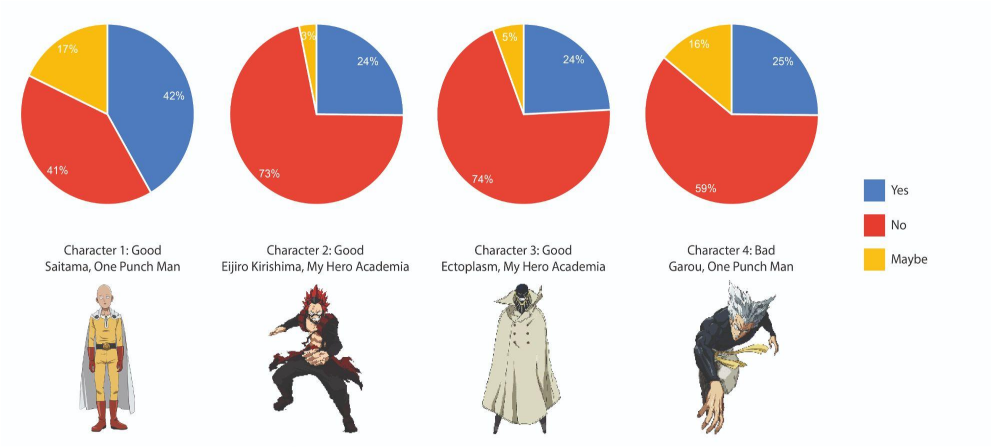


Table 4: Characteristic Details Of ACCs

Character Number	Yes n (%)	May Be n (%)	No n (%)
Character 1	62 (42)	26 (17)	61 (41)
Character 2	35 (24)	5 (3)	109 (73)
Character 3	31 (21)	8 (5)	110 (7)
Character 4	88 (59)	24 (16)	37 (25)

Table 4 shows that if the general appearance of Characters 1, 2 and 3 doesn't change, the perception of participants mostly won't change, and all of these

characters are good in reality. Only Character 4 is expected to have a change in perception which is bad in reality. The main characteristic that affects participant perception is facial features. Some short answers of participants help to understand how the perception of audiences has been affected by this question:

Are there any specific features or traits that make you think the character is good or bad?

Good Characteristic Features in the Perception of Participants

According to Graph 1, only Character 1 seems good to participants. Some comments on good option selection are below:

"Roundhead" (P42, 18-20 Age Categories, Male)

"Soft simple face with skinny body" (P11, 21-25 Age Categories, Male)

"Wearing a superhero outfit" (P155, 36-40 Age Categories, Male)

"Smooth, non-intimidating facial features, vibrant colors" (P154, 18-20 Age Categories, Male)
"His eyes, outfit color, and expression seem to be silly or good" (P144, 31-35 Age Categories, Female)
"Straight brows, neotenic features" (P136, 26-30 Age Categories, Female)
"Round face and warm color scheme" (P131, 18-20 Age Categories, Female)
"Facial expression and stance" (P126, 21-25 Age Categories, Female)

Bad Characteristic Features in Perception of Participants

The other characters are detected as bad characters despite two of them being good in reality. Some comments for good characters (Characters 2 and 3) which have been selected as bad are below:

Character 2

"It looks scary/ ugly which usually means bad" (P144, 31-35 Age Categories, Female)
"Character teeth, eyes, and 'crackly' facial features" (P140, 18-20 Age Categories, Male)
"Lots of scars in his face and the classic shark teeth of villains" (P11, 21-25 Age Categories, Male)
"Visible sharp teeth, small rhombic irises, skewed elongated eyes" (P20, 21-25 Age Categories, Male)
"He looks bad, red eyes, scars etc." (P26, 18-20 Age Categories, Other)

"Sharp aggressive face line" (P33, 18-20 Age Categories, Male)

"Angry look, monstrous appearance" (P41, 21-25 Age Categories, Male)

"Eye shape/ expression, and inhuman looking teeth and skin" (P51, 26-30 Age Categories, Male)

Character 3

"Sharp teeth, mask-like face" (P59, 21-25 Age Categories, Female)

"Dark colors, sharp teeth, sharp lines, shrouded" (P67, 31-35 Age Categories, Female)

"Sharp teeth. Lack of pupils" (P73, 21-25 Age Categories, Female)

"Hooded look. Psychotic smile" (P74, 36-40 Age Categories, Male)

"Creepy smile/exposed teeth are unnerving, wearing a coat usually indicates having something to hide. Necklines/ "hinges" on the side of the face imply robotic/inhuman characteristics" (P82, 21-25 Age Categories, Male)

"Creepy trench coat, darkness in the face, metal looking features, non-human, eye shape is slanted in a scary way, creepy smile, everything" (P89, 31-25 Age Categories, Female)

As seen in the short answers of participants, a lack of anime literacy leads them to read characters' shapes, features, and colors according to their general perception. The stereotype concept should be mentioned at this point. According to the Oxford Dictionary stereotype is "a set idea that people have about what someone or something is like, especially an idea that is wrong" (Oxford Dictionary, n.d.). As a result, popular stereotypes about features or traits of being good or bad have led participants to think of characters' personalities as good or bad.

Focus Group Results

When two focus groups with a total of twenty-five Digital Game Design students were carried out, it was detected that 75% of them knew these ACCs. It shows that they had prior perception knowledge to identify characters.

For Character 1 they instantly knew the character was good but when asked to imagine they didn't know the character and what features would make them think he was good, they stated that it was because the character was bald and he did not seem serious, they also added that the color of their clothing affected their perception. When asked what would change their mind about the character being good, they said that if he had hair and different colors they would have assumed that he is bad. For Character 2 they also said he was good as they knew the character but again when asked to imagine they don't know the character they said that the character's sharp texture, clothing color, and eye color would make them assume he is bad. They said if the character had a software texture and brighter colors they might have assumed he was good. For Character 3 some assumed the character was good and some assumed he was bad, the ones that assumed he was bad said it was due to his facial and body features as well as his body color. Those who knew the

character also said that if they didn't know the character, they would assume he is bad because of the facial and body features and body color. For Character 4 most of the students knew who it was so they knew it was bad. The reason they thought it was bad was because of the character's body shape, hair color, facial and body expression. They said that if the character had a more normal expressive face they would assume that he is good.

CONCLUSION

This study's main objective was to understand how people interpret cartoon characters with their visual traits and/or facial features. This study adjusted the survey research analysis to better determine whether participants' perceptions of them were influenced by their personalities or facial features. The chosen cartoon characters have the appearance and attitude to convey the sentiment realistically. The data gathered from the poll shows that most people make character assumptions based solely on facial expressions or other physical characteristics. People assumed the first character was good due to its rounded edges, the second character was bad due to the sharpness of the character's body, the third character was bad due to the unusually dark appearance of his or her coat, and the third character was assumed to be bad due to its posture and overall dark characteristics. Here, we can observe how people have made assumptions based on the shape, facial expression, colors, and posture of the character. As the participant did not know who the characters were and made assumptions based just on their appearance, their lack of anime literacy can also be a significant component that can be acknowledged as a cause for misinterpretations. All other characters included in the survey were good, except for character four, and just one of the four characters was bad. The findings from the focus group indicate that individuals tend to acquire literacy in a specific field gradually over time if they have a personal interest in that topic. ACCs, or areas of personal interest for Digital Game Students, often result in the development of anime literacy, regardless of their familiarity with Japanese pop culture. Additionally, there is a slight difference between Western and Eastern animation or character design and this difference is just the lack of detail, Western animation tends to have less detail on characters or backgrounds but with Eastern Animation it is the opposite. Most details in Eastern Animation are done over the top, so a character or background designed by Eastern designers is a lot more details compared to Western designers, there can be a separate research done on this topic specifically, that talks about the differences between Eastern and Western digital character design. The main limitation of this study is there may be cases where perception differs from culture to culture. For example, the meanings attributed to colors and the impression created by the use of these colors in anime characters may differ from culture to culture. The relationship between 'personal features or visual traits' and 'perception and culture' are seen as issues worth examining in further research. Another important aspect that must be viewed is the ‘voice acting’ for each character and how this feature is also

perceived by the audience as the voice of the character is also a strong force for how a person will perceive that character, examples of this can be the character All Mighty from the anime, this character has two body types one skinny weak body and a massive bulky body. People would assume that this character has a weak pitch voice but in reality, he has a very deep heroic voice that motivates people when he speaks. The language used for the voice acting is also an important choice, most anime characters' original voices are Japanese but dubbed versions of these characters are also available if the studio that animated the anime show wants it.

This study can be My Hero Academia (Plus Ultra, 2021) used as a basis for future investigations into how a person perceives ACC. It would also be a helpful tool for gathering information on how various groups perceive cartoon characters in various contexts. When comparing various cartoon character styles, for instance, do people from Japan and those from the United Kingdom each perceive emotion differently? This study is very flexible as a model for similar studies in the future because it might be used by many other groups as well.

Overall, the knowledge base that researchers, animators, and character designers have access to is going to be enhanced by this study. It can then assist with the perspective of cartoon characters as a whole.

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