



## **Cultural Variations in Gendered Emotions: A Comics Perspective**

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### **Technology statement**

In this study, tools like ChatGPT and DeepL were used to improve the text's structure, clarity, and readability. These tools helped rephrase content from the researcher's work or other sources while automatically checking for grammar and spelling.

It's important to note that the thesis is the researcher's original work, and proper citations have been provided for any ideas or language borrowed from external sources. Quotes and information from other references are identified according to academic conventions.

This disclosure acknowledges the use of technology in the writing process. The thesis adheres to ethical standards, ensuring the originality of the work and giving credit where it's due. Paraphrasing tools played a role in refining the text while maintaining academic integrity.

### **Abstract**

Comics, as a diverse medium of visual storytelling, offer a unique perspective for exploring the interplay of culture, gender, and emotional representation. This study delves into the dynamics of the comic story world, examining 125 comics from 54 countries and 11 global regions. The aim is to uncover variances in how emotions (valence, arousal) are portrayed across genders and cultures. The results challenge conventional assumptions and reveals the complex nature of emotions in comics, questioning the assumed rigid link between cultural norms and emotional expression. Contrary to expectations, comics exhibit consistent gender-based variations in emotional valence and arousal across cultures, and thus not rigidly adhere to cultural norms linked to masculinity or femininity. Interestingly, there was a significant moderation effect found for culture on gender-related arousal scores but the absence of clear-cut pairwise differences in this moderation effect suggests a nuanced interplay that extends beyond simplistic categorizations. However, the influence of valence on arousal emerged as a key determinant in the emotional dynamics of comics. These results emphasize the multifaceted nature of culture, gender, and emotion in comics, and pave the way for a reconsideration of assumptions about the role of culture and gender in shaping emotional representation within comics.

*Keywords:* Comics, Emotional Portrayal, Culture, Gender, Valence, Arousal, Cultural Variation

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## **Cultural Variations in Gendered Emotions: A Comics Perspective**

Comics stand as an influential medium due to their ability to visually narrate stories, acting as mirrors of societal dynamics. These visual narratives intricately connect with diverse cultures, reflecting the subtleties of values, norms, and emotions (Eisner, 2008; Magnussen & Christiansen, 2000; McCloud, 1994). Emotion plays a fundamental role in comics, with the nuanced expressions of characters carrying layers of meaning and significantly contributing to the impact of visual storytelling (Brody, 1993). This concept is affirmed by McCloud (1994), who acknowledged the emotional engagement that occurs within the sequential framework of comics. He highlighted the reader's ability to identify with the characters and their emotional states. Neil Cohn's work emphasizes the distinct capacity of comics to convey emotions through visual language (2020; 2023). His insights into the relationship between visual elements and emotional resonance complement McCloud's sequential framework, enriching our understanding of how comics through both sequential art and visual language, contribute to the reader's identification with characters' emotional states. These initial insights prompt a closer look into the diverse manifestations of emotions within comics, setting the groundwork for an analysis of their variations across diverse cultural contexts, and across genders.

This study seeks to explore the overarching patterns in comics with the broader discussions surrounding culture, gender, and emotional representation. Traditional gender roles, deeply ingrained in some cultures, refer to societal expectations and norms that prescribe specific behaviors, responsibilities, and characteristics based on an individual's perceived gender (Lindsey, 2020). These roles often perpetuate stereotypical notions about masculinity and femininity, dictating how individuals should behave, and how they should express emotions (Bem, 1974; Cocca, 2020). Such traditional gender roles could influence the depiction of characters' emotions in comics, reinforcing established norms. Whereas cultures advocating gender equality could provide artists with the opportunity to depict diversity

within and between genders, fostering a nuanced portrayal of emotions (Brody, 1993; Hofstede, 1998, 2001). This distinction highlights the potential influence of societal values on the portrayal of emotions within comics.

Despite existing research on comics, culture, gender, and emotions individually, a significant gap exists in their integrated study. Thus, this study seeks to bridge this gap by incorporating these critical elements, delving into how diverse cultures depict emotions in comics based on gender and culture. The overarching research question propelling this study is: Do comics differ in the ways they depict the emotions (valence, arousal) of characters of different genders across cultures?

By exploring cultural variation in emotion depiction, this investigation becomes crucial in uncovering the intricate relationship between culture, gender, and emotional portrayal within comics. It aims to provide insights into how comics reflect and vary in the depiction of gendered emotions across different cultures, contributing to our understanding of cultural nuances in emotional representation (Smith, 2019)

This study anticipates shedding light not only on the dynamics within comics and media studies but also on the broader discourse surrounding culture, gender, and the representation of emotions. Ultimately, it aims to contribute valuable insights that deepen our understanding of the societal and cultural influences on visual storytelling.

## **Theoretical Framework**

### **Comics as Cultural Artifacts**

Comics, a unique form of visual storytelling, convey narratives through a combination of sequentially arranged images and text (McCloud, 1994; Meskin, 2007). With a rich historical tradition, comics have evolved into a diverse medium, engaging readers through illustrations and narratives (Beaty & Woo, 2016). Delving into the realm of comics reveals a medium woven into the diverse fabric of global cultures (Magnussen & Christiansen, 2000; McCloud, 1994). The visual narrative inherent in comics allows creators to embed cultural elements, values, and societal nuances directly into the storytelling. By portraying worlds that often reflect the cultures comics originate from, they serve as a lens to showcase the values and perspectives of both the cultures and their creators (Duncan et al., 2015). Within this context, emotions play a significant role in characters' expressions and influence the profound impact of visual storytelling (Brody, 1993). This prompts a closer examination of the dynamics among culture, gender, and emotion within the comics story world.

This study therefore includes several interconnected objectives. Firstly, an investigation will be conducted into how gender influences the nature of emotions in comics. Secondly, the nuanced representations of gendered emotion within comics will be delved into, exploring how they interact with cultural expectations. Lastly, the multifaceted relationship between culture, gender, and emotion will be explored, aiming to uncover patterns and variations in emotional depictions in comics. This study therefore aims to contribute to the broader understanding of the interplay between culture, gender, and emotion in the visual language of comics.

### **Emotion in Comics**

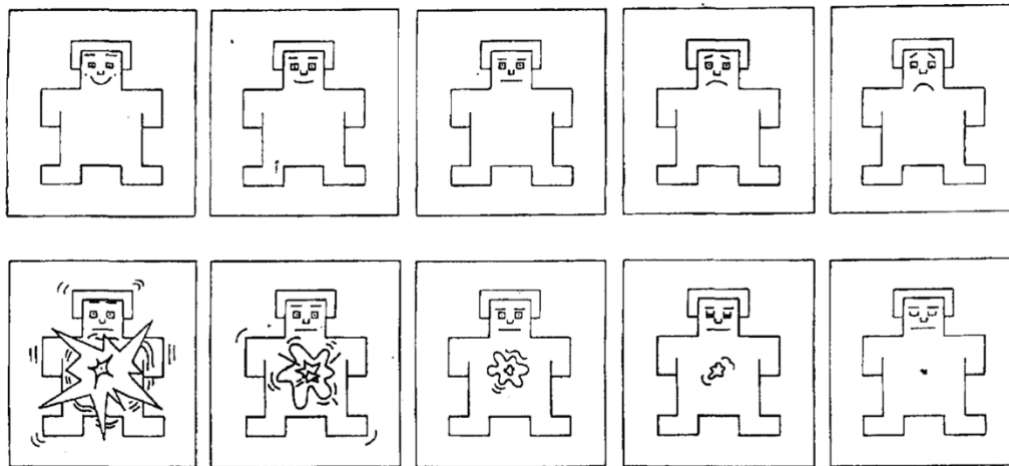
Emotion encompasses the intricate and subjective experiences individuals undergo in response to a variety of stimuli (Cannon, 1927; Frijda, 1986). This comprehensive view of

emotion considers both the body's physical response and the mental interpretation, with the identification of emotion based on cognitive appraisal (Friedman, 2010; Schmidt et al., 2010). This view aligns with Russell's (1980) model, which characterizes emotion along two principal dimensions – valence and arousal, both crucial for visually representing emotional experiences. Valence captures the positive or negative nature of an emotional experience, ranging from pleasant to unpleasant, while arousal signifies the intensity or energy associated with the emotion, spanning from calm to highly activated states (Russell, 1980).

Building upon the theoretical foundation of emotion, the Self-Assessment Manikin (SAM) becomes a vital tool for translating these theoretical insights into measurable dimensions. Employing visual scales represented by stylized humanoid figures, SAM provides a tangible assessment of emotional valence and arousal and provides quantifiable data on these emotional dimensions (Bradley & Lang, 1994). The Self-Assessment Manikin is shown in Figure 1. The figure shows five figures each depicting a different level of valence and arousal. The top panel shows a figure representing valence while ranging from smiling and happy, to frowning and unhappy. The bottom panel shows a figure representing arousal while ranging from excited and wide-eyed to relaxed and sleepy (Bradley & Lang, 1994). Its enduring acceptance and validation over four decades underscore its utility in capturing affective experiences. For example, in a study by Ernst et al. (2023), SAM effectively assessed emotional responses to acute mental stress. Subsequently, in the research conducted by Xie et al. (2020), SAM's integration in a virtual reality setting proved essential for capturing nuanced emotional reactions. SAM proves valuable for measuring emotions in various research contexts, highlighting its reliability and versatility.

**Figure 1**

*Self-Assessment Manikin (SAM) used to rate the affective dimensions of valence (top panel), and arousal (bottom panel) (Bradley & Lang, 1994).*



Furthermore, the understanding of emotion draws on comprehensive frameworks such as discrete and dimensional emotion theories (Ekman, 1992; Russell, 2003). In emotion theories, the discrete perspective sees emotions as clear-cut and distinct experiences, each representing specific and recognizable feelings (Ekman, 1992). On the other hand, dimensional theories propose a more continuous and fluid understanding of emotions, situating them along various dimensions, allowing for a more nuanced and complex range of emotional experiences (Russell, 2003). While these theories provide a foundation for understanding emotions in the real world, applying them to the comic story world may not be straightforward.

How do the theories guiding the expression and understanding of emotions in the real world translate to the comic story world? Comics bring emotions to life through both visual and narrative portrayals of characters' affective states (McCloud, 2006). They achieve a balance between portraying emotions in clear-cut, discrete ways and capturing their nuanced, dimensional aspects through both valence and arousal. Valence, within comics influences the

tone and mood of a comic scene. For instance, through visual cues like facial expressions and color choices, in which valence offers direct representations of positive or negative emotions, ensuring clarity. Simultaneously, arousal adds dynamism to the portrayal of emotion by using techniques like dynamic panel layouts and intense action sequences, emphasizing the intensity or energy associated with emotions.

However, even though valence and arousal are both related to emotion, the relationship between valence and arousal in comics is complex, influenced not only by universal emotional patterns but also by the distinct visual language of comics. While there is a general trend that some negative emotions are associated with higher arousal compared to positive emotions, the variability and context-dependency of emotional representation in comics highlight the need for a nuanced exploration. This is because emotion, whether in the real world or in comics, is not a universally experienced phenomenon (Frijda, 1986; Lazarus, 1991).

### **Emotion and Gender in Comics**

The relationship between valence and arousal in emotional representation within comics gains added depth when considering gender as a potential influencer, prompting an exploration into the facets of gender. The concept of gender encompasses a diverse range of identities and expressions, surpassing the traditional binary male and female categories (Kriger & Keyser-Verreault, 2022). Contemporary discussions recognize a spectrum that includes non-binary, transgender, agender, and other identities (Kriger & Keyser-Verreault, 2022; Lindqvist et al., 2020). Salvati and Koç (2022) argue that the understanding of gender has evolved significantly over the years, challenging rigid norms, and embracing the complexity of individual experiences. This shift reflects a growing acknowledgment that gender is a social construct shaped by cultural, social, and historical contexts (Salvati & Koç, 2022). This expanded understanding sets the backdrop for exploring its nuanced portrayal

within comics, in which creators navigate and reflect these evolving concepts in their character representations.

Gender within comics reflects complex societal constructs, encompassing attributes, roles, and behavior that align with expectations of masculinity and femininity (Bem, 1974; Butler, 1990; Cocca, 2020). This gendered approach significantly influences the portrayal of emotions, perpetuating historical stereotypes rooted in cultural norms and expectations (Bem, 1974; Mehrabian, 2017). These historical stereotypes portray characters often conforming to predetermined emotional roles. For instance, certain emotions are assigned to or limited based on gender, reinforcing conventional expectations (Mehrabian, 2017). To illustrate, in classic comics, male characters are often portrayed as stoic and emotionally restrained, while female characters were often portrayed as expressive and sensitive.

However, within the realm of comics, there is a transformative potential to challenge and disrupt these traditional gender norms (McCloud, 1994). Creators, such as those highlighted by Duncombe (1997), actively leverage comics as a platform to break free from established stereotypes, recognizing the power of storytelling in altering societal perceptions. This emphasizes the importance of comprehending the role of gender and possible stereotypes in the analysis of emotion portrayal in comics.

### **Emotion, Gender, and Culture in Comics**

The extent to which comics challenge or conform to gender norms is not uniform across cultural contexts. For example, in cultures where traditional norms are deeply rooted, comics tend to stick to conventional representations of gender and emotions. On the contrary, cultures that embrace more progressive values often feature a diverse and unconventional portrayal in their comics. When looking at cross-cultural differences in comics, recent work sheds light on both universal and culture-specific aspects of visual storytelling. Crucially, it emphasizes the need to move beyond the assumption of universality, recognizing that visual

language comprehension is influenced by factors such as cultural background, making visual storytelling a dynamic and culture-sensitive medium that challenges the notion of a one-size-fits-all approach (Atilla et al., 2023; Cohn, 2020, 2023). Thus, emotions are not only gendered but also display cultural variability, characterized by diverse interpretations across societies (Deng et al., 2019). This variation in emotional expression and understanding is a key focus of cross-cultural psychology (Mesquita, 2003). By acknowledging the cultural dimensions of visual language, this study also emphasizes contextual factors that influence the perception and comprehension of emotion in comics.

Comics, within this framework, are a medium capable of both mirroring and questioning cultural variations in emotional expression and offer a unique window into the complexities of emotional representation (Duncan et al., 2015). For instance, in a hypothetical South Korean comic depicting a romantic scenario, the visual storytelling may express positive valence through subtle, tender gestures while maintaining a moderate level of arousal. This aligns with and thus mirrors the cultural interpretation of South Korean norms that emphasize reserved expressions of affection.

However, comics also have the power to challenge cultural norms by introducing characters and scenarios that defy conventional emotional expectations. For example, a comic might depict a character from a traditionally stoic culture expressing vulnerability, challenging stereotypes, and broadening cultural perspectives on emotional authenticity. These examples illustrate how comics could dynamically explore cultural intricacies in emotional representation, aligning with research on cross-cultural portrayals of gendered emotions. Examining emotions through the lens of comics could offer valuable insights into how culture shapes their portrayal (Duncan et al., 2015). This, in turn, contributes to a nuanced exploration of the relationship between culture and emotional representation, a central theme in this study.

## **Hofstede's Cultural Dimensions**

Culture is a recurring theme in both emotional portrayal and gender representation, emphasizing its importance for a comprehensive investigation in this study. To gain a deeper understanding of the concept of culture, it is evident to explore its comprehensive definition. According to Geert Hofstede (1999), culture represents the collective programming that distinguishes members of one society from another. Expanding on this, Clifford Geertz (1993) defines culture as

"a historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which individuals communicate, perpetuate, and develop their knowledge about and attitudes toward life" (p. 89).

This understanding of culture shows its impact on human activity (Monaghan & Just, 2000), as it encompasses shared values, beliefs, and predictable behaviors (Herbig, 1994; Hofstede, 1984). Culture guides individuals with interpreting and navigating the world, influencing their behavior, expression, and creative endeavors. In comics, culture is pivotal for the representation of diverse elements and perspectives, as artists draw inspiration from their cultural surroundings, turning societal values, traditions, and norms into visual stories (Magnussen & Christiansen, 2000; McCloud, 1994).

Hofstede's cultural dimensions theory identifies six cultural dimensions that help analyze and understand variations in cultures (Hofstede & Bond 1984). Initially designed to analyze cultural differences in work environments, Hofstede's theory has found broad application in various fields and contexts, including application in areas such as international business, cross-cultural communication, and education (Alqarni, 2022; Leonavičienė, 2021; Li et al., 2023). The dimensions—Power Distance Index, Individualism vs. Collectivism, Masculinity vs. Femininity, Uncertainty Avoidance Index, Long-Term Orientation vs. Short-

Term Normative Orientation, and Indulgence vs. Restraint— provide a framework for analyzing how cultural factors may impact diverse aspects of human interaction and behavior (Hofstede & Bond 1984).

In the context of comics and the focus of this study, Hofstede's dimension Masculinity vs. Femininity can be particularly instrumental in unraveling how gender perceptions are formed across diverse cultural settings. High masculinity signifies distinct traditional gender roles, emphasizing assertiveness and achievement, while high femininity suggests a more fluid distribution of roles, emphasizing cooperation and quality of life (Hofstede & Bond 1984). This dimension aids in identifying cultural conventions influencing the portrayal of emotions in comics (Hofstede, 1998, 1999, 2001). Utilizing Hofstede's cultural dimensions, this study aims to illuminate cultural variation in gender perceptions and their consequential effects on emotional representations in visual storytelling.

Comics originating from countries with cultures characterized as more masculine, as outlined within Hofstede's cultural dimensions, may reflect varying gender perceptions (Hofstede, 1998). The concept of masculinity and femininity in certain cultures may influence specific conventions and expectations regarding the portrayal of emotions in comics (Hofstede, 1998, 2001). For instance, feminine cultures present a broader spectrum of emotional expressions for both male and female characters than masculine cultures, surpassing historical stereotypes. These cultural nuances have the potential to create a unique emotional landscape, challenging or adhering to traditional gender norms. By focusing on comics from these cultures, this study aims to shed light on the cultural variations in gender perceptions and their impact on emotional depictions in visual storytelling. This application of Hofstede's theory enhances the research's theoretical framework, providing a systematic approach to exploring the interplay between culture, gender, and emotions within the realm of comics.

## A Comics Perspective

The intersection of culture, gender, and emotion in comics is a dynamic landscape. Cultural values and gender expectations are expected to influence the emotional expressions of characters in comics, impacting the valence and arousal of depicted emotions. The relationship between culture, gender, and emotion in comics is central to understanding the overarching research question: *Do comics differ in the ways they depict the emotions (valence, arousal) of characters of different genders across cultures?*

To delve deeper into this understanding this study examines a cross-cultural corpus of 125 comics from 54 countries and 11 global regions annotated for emotion (valence and arousal) and gender within the TINTIN Project (Visual Language Lab, 2023). The analysis aims to incorporate as much cultural diversity as possible, guided by Hofstede's masculinity vs. femininity framework (Hofstede, 1998), and these classifications are assigned to comics from each country. The aim is to explain whether comics differ in the portrayal of emotions for characters of different genders across cultures.

The hypotheses are formulated based on existing literature and the variables in the research. While existing literature explored how culture and gender influence emotion in general, this study takes a specific look at the two principal dimensions of emotions proposed by Russell (1980), valence and arousal. This targeted approach allows to delve deeper into the dynamics of emotional representation in comics, offering a comics perspective on the interplay between culture, gender, and emotion.

Given that comics draw inspiration from cultural surroundings and cultures vary along dimensions of masculinity and femininity, it is hypothesized that cultural context influences emotional depiction in comics (H1) (Hofstede, 1998; Magnussen & Christiansen, 2000; McCloud, 1994). Comics originating from more masculine cultures will depict valence of emotion differently than those from more feminine cultures (H1a). With that, comics

originating from more masculine cultures will differ in the depiction of arousal of emotion from those from more feminine cultures (H1b). These hypotheses align with the theoretical understanding that cultural norms influence the emotional landscape of comics.

Recognizing the historical tendency of comics to conform to gender stereotypes, it is hypothesized that male and female characters in comics will exhibit distinct emotional portrayal (H2) (Bem, 1974; Cocca, 2020). Moreover, male and female characters will differ in their depiction of valence (H2a). Additionally, male and female characters will exhibit different arousal scores (H2b). Acknowledging the interconnectedness of gender and emotional dynamics, these hypotheses extend our theoretical understanding of the gendered approach within the comics.

Expanding on Hofstede's Cultural Dimensions Theory, and considering the assertions of Bem (1974) and Mehrabian (2017), who stated that cultural norms dictate how men and women should express emotions within comics, it is hypothesized that culture moderates the relation between gender and emotion depiction in comics (H3). In cultures characterized as more masculine, the gender difference in emotional valence will be more pronounced than in more feminine cultures (H3a). Furthermore, the association between gender and arousal will vary based on the cultural context of the comics (H3b). These hypotheses directly connect to Hofstede's framework, providing a systematic exploration of cultural influences that extends our understanding of how cultural factors influence the nuanced interplay between gender and emotion.

Lastly, leveraging Russell's model and the comprehensive view of emotion, it is hypothesized that comics depicting positive valence will have different arousal scores than those depicting negative valence (H4) (Russell, 1980).

Overall, this study seeks to contribute nuanced insights that advance our understanding of how cultural expectations and gender come together to shape emotional depictions in comics.

## Method

### Materials

In this study, a corpus analysis was used to examine emotion (valence and arousal), gender, and culture. As part of the overarching TINTIN project, a large amount of data has been made available for research on how visual language operates in graphic narratives. A total of 1030 comics from 143 countries have been added to the software, and ongoing work involves annotating those across a variety of dimensions (Visual Language Lab, 2023). The corpus of this study contains comics that were annotated for emotion (valence and arousal), gender, and culture. Gender annotations were conducted on 144 comics by the researcher, while three other coders contributed to emotion annotations for a total of 155 comics, respectively. The analysis was centered on identifying comics that received annotations for both gender and emotion after which the culture annotations were contributed by the researcher. To maintain data integrity, comics with incomplete annotations for any of the variables were excluded from the corpus. This brings the total to 125 comics that persisted (see Table 1). An overview of the comics within the corpus can be found in Appendix A.

**Table 1**

*Comics in the Corpus*

| <b>Global Region</b> | <b>Total Comics</b> | <b>Average female annotations per comic</b> | <b>Average male annotations per comic</b> |
|----------------------|---------------------|---------------------------------------------|-------------------------------------------|
| Africa               | 23                  | 12.3                                        | 27.0                                      |
| Asia                 | 36                  | 26.6                                        | 24.4                                      |
| Central Asia         | 3                   | 32.7                                        | 20.7                                      |
| East Asia            | 3                   | 24.3                                        | 11.7                                      |
| South Asia           | 10                  | 23.2                                        | 21.2                                      |
| Southeast Asia       | 10                  | 26.2                                        | 37.6                                      |
| West Asia            | 10                  | 26.4                                        | 30.9                                      |
| Europe               | 52                  | 21.3                                        | 52.7                                      |
| Middle East          | 6                   | 19.0                                        | 14.5                                      |

## Comics in the Corpus

| Global Region | Total Comics | Average female annotations per comic | Average male annotations per comic |
|---------------|--------------|--------------------------------------|------------------------------------|
| America       | 2            | 22.0                                 | 44.0                               |
| North America | 1            | 7.00                                 | 59.0                               |
| South America | 1            | 35.0                                 | 29.0                               |
| Oceania       | 6            | 54.2                                 | 37.7                               |

All comics were annotated using MAST (Multimodal Annotation Software Tool) (Cardoso & Cohn, 2022), which offers users the ability to analyze visual and multimodal content by enabling the selection and annotation of visual regions. Additionally, it supports the creation of links between these annotations, forming both dependencies and constituent structures (Cardoso & Cohn, 2022). Figure 2 shows an example of the gender annotation process in MAST for the comic *The Yankee Commandante* (Yakupi, 2019). A visual region is selected, and gender annotation is subsequently added in the notes field under ‘Character’.

**Figure 2**

*Gender Annotation process in Multimodal Annotation Software Tool*



For the annotation of culture, established data on global region was used after which the comics were annotated for the appropriate culture (feminine and masculine) using the data from the Country Comparison Tool (Minkov & Kaasa, 2022). This tool is designed to compare cultural dimensions scores between different countries based on Geert Hofstede's cultural dimensions theory (Hofstede, 1998). The study aimed at an equal distribution of comics from countries with more feminine values, and comics from countries with more masculine values.

## **Procedure**

As multiple coders participated in collecting the data for this study by annotating the comic books, coders received training to ensure a shared understanding of annotation procedures and improve coding reliability. The coders initially devoted about two to three weeks to the development of their annotation skills by coding practice comics. During this phase, annotations underwent collective review and discussion among all coders. Once the practice annotations were considered proficient, the coders proceeded to annotate the comics within the TINTIN corpus. In cases of uncertainty, other participating coders classified the identical regions and consensus was reached through discussion. The accuracy of these annotations was subsequently methodically confirmed through a review sampling process.

To make the annotation process more efficient and optimize the size of the corpus in this study, emphasis was placed on comics with pre-defined character regions. Prioritizing these comics allowed coders to quickly annotate gender and emotion (valence and arousal) for the specified characters, saving time that would otherwise be spent defining character regions. Annotation for both gender and emotion was done at the same time, followed by culture annotations. However, for the annotation of emotion, valence was classified first to enhance the precision of arousal classification.

Emotion annotations were contributed by three other coders using the VLT:

Semantics: Emotion V.2 (Cohn & Hacımusaoglu, 2023). The comics were annotated for both the valence of emotion and the arousal of emotion. To assess valence and arousal, the Self-Assessment Manikin (SAM) is employed as a rating tool in this research. Visual scales represented by stylized humanoid figures are used to report emotional experiences, providing measurable data on the dimensions of emotional valence and arousal (Bradley & Lang, 1994). To utilize the Self-Assessment Manikin (SAM), emotional experience is rated by selecting the appropriate response on the scales representing valence and arousal dimensions. The Self-Assessment Manikin (SAM) has gained broad acceptance and validation due to its strong assessment properties and user-friendly design. It captures affective valence and arousal dimensions, fundamental components of emotional experience, using intuitive visual representations (Bradley & Lang, 1994). Extensive research and the scale's enduring use across diverse populations and contexts confirms SAM's reliability and validity, establishing it as a validated instrument for assessing emotional responses in various scientific disciplines.

To further understand the assessment of emotion using SAM, it is important to navigate through the elements crucial in classifying emotion. For example, facial expressions play a pivotal role in assessing emotional valence, with features like raised eyebrows or downturned mouths conveying positivity or negativity. Moreover, bodily postures, such as slouched or upright positions, contribute additional cues, shaping the emotional tone and influencing arousal levels. Slouching may indicate a lack of excitement, while standing tall can suggest a positive or engaged state. Subsequently, motion lines portraying movement around characters intensify emotional expression, indicating actions or reactions and impacting both valence and arousal. With that, textual elements provide context to emotions, enhancing the overall interpretation of valence and arousal in comic representations.

## **Areas of analysis**

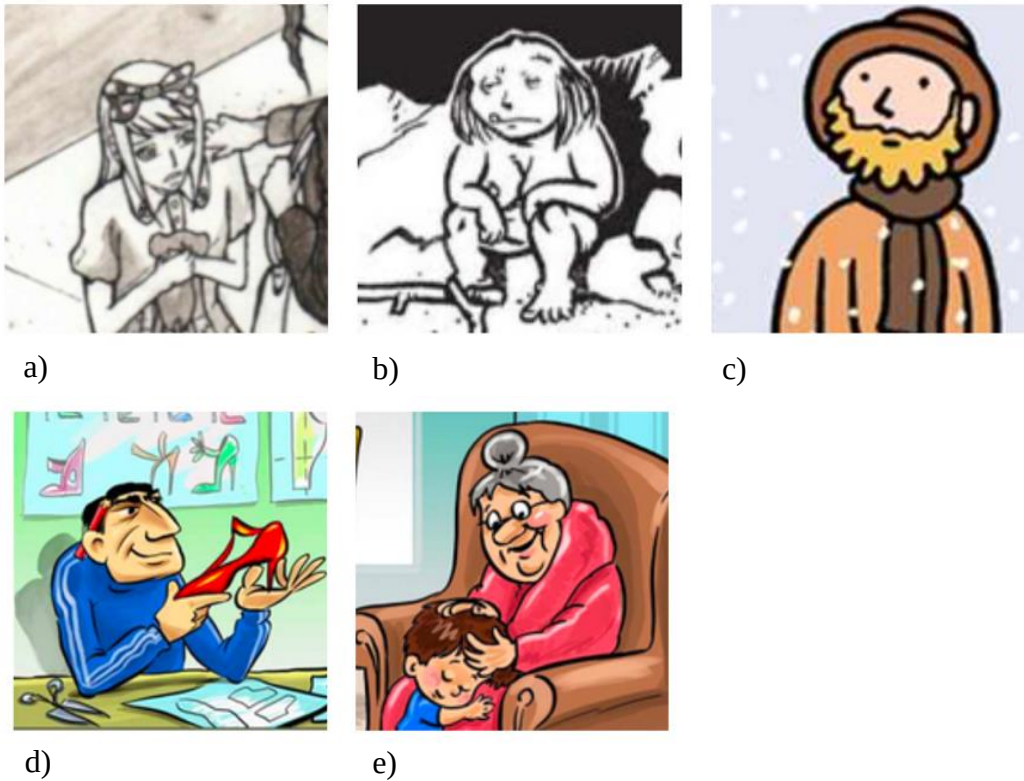
### ***Emotion***

Valence, representing the pleasantness of emotion, which, to add nuance to the annotations in MAST, utilized a 5-point rating system that ranged from negative to positive. This 5-point rating also aligns with the assessment of valence using SAM. The options of the scale in MAST included negative, slightly negative, neutral, slightly positive, and positive. Although the assessment focused on overall valence rather than individual emotions, illustrative examples are provided for both negative and positive valence to enhance the understanding of the evaluation. Negative valence includes emotions like unhappy, annoyed, unsatisfied, melancholic, despairing, or bored. On the other hand, positive valence includes emotions like happy, pleased, satisfied, contented, hopeful, or relaxed (Mehrabian & Russell, 1974; Bradley & Lang, 1994).

Arousal, representing the intensity of emotion, was measured using a 5-point scale that spans from 1 (indicating the lowest arousal) to 5 (indicating the highest arousal). Although valence and arousal are related, they are approached differently. For example, sadness is a negative emotion with low arousal, but frustration is a negative emotion with high arousal. On the other hand, relaxation is a positive emotion with low arousal, but enthusiasm is a positive emotion with high arousal. To better illustrate the annotation process and enhance the understanding of the assessment, various examples are provided. Figure 3 shows examples from the corpus, representing all five levels of valence with low arousal scores. Subsequently, each example is presented with the explanation of the assessment for both valence and arousal.

**Figure 3**

*Examples of annotation for valence with low arousal*



*Note.* a) Negative valence, arousal score of 2 (Adapted from Ogden, 2014). b) Slightly negative valence, arousal score of 2 (Adapted from Tetsuya, 2015). c) Neutral valence, arousal score of 1 (Adapted from Stok, 2012). d) Slightly positive valence, arousal score of 2 (Adapted from Vardikyan, n.d.). e) Positive valence, arousal score of 3 (Adapted from Vardikyan, n.d.).

Examining Figure 3a, the depicted character sits on the ground with a rather sad facial expression, given the lowered eyebrows, frowning mouth, and the other character providing comfort. The subtle facial expression and closed bodily posture imply less intensity of emotion. The combination of the subtle but sad facial expressions, and a closed bodily posture classifies the emotion as negative with a low arousal score of 2.

Moving to Figure 3b, the character displays a closed bodily and facial expression as well. However, this character's face exhibits a more neutral emotion compared to Figure 3a, suggesting a bored or tired emotion through the characters' lowered eyebrows, dull gaze and slouched bodily posture. Being bored or tired would be classified as less negative than sad, and the character's somewhat neutral expression and subtle bodily posture suggest a low arousal score. This results in a slightly less negative emotion classification with an arousal score of 2.

Figure 3c shows a character with no clear expression of emotion. The lack of eyebrows, which typically play a crucial role in expressing emotions, along with a blank facial expression and neutral body posture, makes it difficult for coders to identify a specific emotion other than neutral based on the visual appearance. As a result, the character is classified as neutral with a low arousal score of 1 or 2.

Moving on to Figure 3d, shows a character holding a shoe and exhibiting a slight smile, which could imply a satisfied emotion. Satisfaction is rated slightly less positive than for example excitement or happiness. The low intensity of the emotion, characterized by the closed-mouth smile, calm appearance, and rather subtle bodily posture led to the classification of the character's emotion as slightly positive with an arousal score of 2.

The final example involving low arousal features two characters in Figure 3e, with emphasis on the character sitting in the chair. The depicted smile, hug, and slightly raised eyebrows convey positive emotions such as happiness, love, and affection. Because of the character's opened mouth and raised eyebrows, but subtle bodily posture the emotion is classified as positive with an arousal score of either 2 or 3.

Figure 4 shows more examples of the classification of annotations from the corpus for the levels of valence, but then with high arousal scores to further illustrate the annotation process.

**Figure 4**

*Examples of annotation for valence with high arousal*



a)

b)

c)

d)

*Note.* a) Negative valence, arousal score of 5 (Adapted from Riwizi, 2019). b) Slightly negative valence, arousal score of 4 (Adapted from Biakou, 2017). c) Slightly positive valence, arousal score of 3 (Adapted from Jeri, 2021). d) Positive valence, arousal score of 5 (Adapted from Popa, 2010).

Neutral valence is excluded from the figure due to the absence of instances where neutral valence is paired with high arousal scores. Characters expressing neutral valence typically display limited to no emotions, making it impossible to achieve high arousal scores.

In Figure 4a, the character vividly shows anger or frustration with notable intensity given the large frown, wide eyes, and bared teeth. Anger or frustration are strong negative emotions. The illusion of the image shaking emphasizes the emotional intensity, leading to the classification of the character's emotion as negative valence with a high arousal score of 5.

Moving to Figure 4b, the character displays an astonished, stunned, or shocked expression due to the character raising one eyebrow, the wide eyes, and a partially opened mouth. Being stunned signifies a slightly less negative emotion than anger or frustration. The intensity of the emotion is high as the character shows big facial expressions and is surrounded by motion lines indicating dynamic movement. This results in the classification of the emotion as slightly negative with a high arousal score of 4.

Figure 4c shows a character giving the impression of a more positive emotion with a smiling expression and slightly raised eyebrows. The text implies curiosity and openness to engagement, suggesting a slightly positive emotion. The character's broad smile indicates higher arousal, leading to a classification of the emotion slightly positive valence with a moderately high arousal score of 3.

Figure 4d however illustrates the most intense positive emotion among the examples, given the character's big bodily gestures, broad smile, and squinting eyes. The character gives the impression of being overly excited to return to the village. The excitement and big facial and bodily expressions led to the classification of the emotion as positive with a high arousal score of 5.

### ***Gender***

In this study, gender was characterized as the gender attributed to characters in comics based on their observable characteristics, such as appearance, the names they bear, or the way they are identified or addressed by other characters within the narrative. For example, visual elements like facial features, body structure, clothing choices, hairstyles, and names and pronouns contribute to the assessment of gender. A character referred to as "she" or "her," along with observable characteristics like a feminine body posture or subtle facial features, is classified as female. For instance, men usually have more angular faces, characterized by larger facial bones, a broader jawline, and pronounced cheekbones. In contrast, women typically have softer, rounded facial contours with narrower jaws and less prominent cheekbones.

For annotation, gender was defined as female, male, transgender female, transgender male, agender, non-binary, or non-human. Characters marked as non-human were annotated with their gender identities if that could be determined; if not, they would be labeled as non-human ambiguous. For instance, in certain comics, there are characters such as zombie-like

characters, animals, or imaginary characters with apparent gender identities even though they are not human. An illustrative example of a non-human female character would be a dog in a comic displaying motherly behavior and being referred to by a feminine dog name. When the gender of the character is classified, the designated gender is added in the notes field of each character region for each annotation.

Although the annotations encompass a broader spectrum of gender labels, this study narrows its focus to two traditional gender categories: male and female. This focus results from the lack of data points of diverse genders within the available corpus of comics. This lack of data points stems from the observation that comics historically prioritized binary gender roles, with minimal inclusion on non-binary, agender, and transgender characters. While recognizing the importance of diverse gender identities, the constraints of the dataset require this narrowed field of analysis. This binary framework, however, aligns with the framework for cultural dimensions of masculinity and femininity. To better enhance the understanding of the assessment for gender annotations as well, various examples are provided for illustrative purposes in Figure 5.

**Figure 5**

*Example of gender annotations*



*Note.* a) Male, Female (Adapted from Yakupi, 2019). b) Female, Male (Adapted from Mahon, 2021). c) Female (Adapted from Lalor, 2021).

In Figure 5a, the leftmost character has observable masculine features such as a rectangular face, bushy eyebrows, a somewhat bigger nose, and the character is wearing a traditional suit with a tie and a hat. Additionally, the character is addressed by the other characters as “mister”. The character’s gender is therefore classified as male. On the right side of Figure 5a, the character displays more feminine facial characteristics, including a rounded chin, full lips, and a subtle nose. The character is also wearing large hoop earrings and a top with a slightly lower back. These visual elements contribute to the classification of this gender as female.

Figure 5b shows two characters as well. The leftmost character has a feminine body posture, characterized by narrower shoulders and a rounded upper body. Additionally, the character is wearing traditionally feminine clothing such as a skirt, contributing to the classification of the gender as female. In contrast, the character on the right shows a more masculine body posture, with broader shoulders and prominent facial features. It is also noticeable that the character shows facial hair, which further supports the classification of the gender as male.

Figure 5c shows an edge case. The characters in this particular comic defy traditional gender norms, as both male and female figures embrace makeup, varied hairstyles, and diverse wardrobes. The absence of a clear gender indicator, such as a name or pronoun, prompted a collaborative review with the coders to determine the most appropriate classification. Despite the character wearing somewhat masculine clothing and having a shaved hairstyle, the consensus was to assign the gender as female. This decision was influenced by the contextual understanding that the comic depicted a band with three girlfriends, and the other characters exhibited more masculine facial features.

## ***Culture***

Culture was defined based on Hofstede's cultural dimensions (Hofstede, 1998, 2001). Hofstede's model considers culture as a multi-dimensional construct encompassing various aspects of societal values, norms, and behavior. These dimensions are used to quantify and compare cultural differences among countries or regions. The chosen cultural dimension for this study was "Masculinity vs. Femininity", which examines how societies prioritize values traditionally associated with masculinity or femininity (Hofstede, 1998). Therefore, cultures of comics within the corpus of the study were labeled either masculine or feminine, relying on Hofstede's data.

The dimensions utilize a 0-100 scale to present country scores and the classification of comic cultures is determined by these individual country scores on the "Masculinity vs. Femininity" dimension. A lower score on the scale suggests a more feminine culture, while a higher score suggests a more masculine culture. In examining the influence of culture on emotional depiction in comics, the choice to classify cultural dimensions as either masculine or feminine aligns with existing frameworks and practical considerations. This binary approach, based on a 0-100 scale, complements the dataset's binary representation of gender, allowing for a direct comparison of gender and culture. This choice combines practicality with the study's objectives, providing meaningful comparisons between distinct cultural characteristics and emotional portrayals. Given the accessibility of this data, countries scoring 49 or below are labeled as feminine, and those scoring 51 or above are labeled as masculine. A score of 50 indicates an equal distribution within the dimension. Notably, no comic cultures within the corpus scored equally. "Masculinity vs. Femininity" allows for a nuanced exploration of how cultural values related to gender roles influence emotional portrayals in comics. It provides a structured framework to investigate whether cultures emphasize specific

emotions for male or female characters based on traditional gender norms. See Table 2 for the distribution of comics across these dimensions.

**Table 2**

*Distribution of comics across cultures*

|        | <b>Global Region</b> | <b>Culture</b> | <b>N</b> |
|--------|----------------------|----------------|----------|
| Comics | Africa               | F              | 18       |
|        |                      | M              | 5        |
|        | Asia                 | F              | 14       |
|        |                      | M              | 22       |
|        | Central Asia         | F              | 3        |
|        |                      | M              | 0        |
|        | East Asia            | F              | 1        |
|        |                      | M              | 2        |
|        | South Asia           | F              | 6        |
|        |                      | M              | 4        |
|        | Southeast Asia       | F              | 4        |
|        |                      | M              | 6        |
|        | West Asia            | F              | 0        |
|        |                      | M              | 10       |
|        | Europe               | F              | 24       |
|        |                      | M              | 28       |
|        | Middle East          | F              | 2        |
|        |                      | M              | 4        |
|        | America              | F              | 1        |
|        |                      | M              | 1        |
|        | North America        | F              | 0        |
|        |                      | M              | 1        |
|        | South America        | F              | 1        |
|        |                      | M              | 0        |
|        | Oceania              | F              | 0        |
|        |                      | M              | 6        |

*Note.* F = Feminine culture, M = Masculine culture

## Data Analysis

To address the research question, a repeated measures design was employed, with each comic serving as a unit of analysis. Two main analyses were conducted, each utilizing the variable valence in distinct ways. In the initial analysis, valence, indicating the pleasantness of emotion, served as a dependent variable, and was operationalized on a 5-point scale ranging from negative to positive (-1 = negative, -0.5 = slightly negative, 0 = neutral, 0.5 = slightly positive, 1 = positive). Valence was converted from a categorical variable to a continuous variable to examine the influence of culture and gender on the valence of emotions depicted in comics. Average valence levels were calculated for both male and female characters per comic, after which the means per comic were computed and compared in the analysis. A Two-Way Repeated Measures ANOVA explored the effects of culture (masculinity and femininity) and gender (male and female) on valence (positive and negative). More precisely, it is tested if comics originating from cultures characterized as more masculine will tend to depict emotions with a different valence compared to those from more feminine cultures. Additionally, it is tested if there were differences in valence between male and female characters, and whether the cultural context influenced the gender-based variations in valence.

In the subsequent analysis, valence was treated as an independent variable. For this analysis, the categorical variable of valence was converted to a binary variable grouped from the 5 valence levels: negative (including slightly negative) and positive (including slightly positive). Neutral levels (coded as 0) were excluded from the study. The dependent variable, arousal (reflecting the intensity of emotion), was operationalized using a 5-point scale ranging from 1 (indicating the lowest arousal) to 5 (indicating the highest arousal). Average arousal scores were calculated for both male and female characters per comic across the two valence levels (positive and negative), after which the mean arousal scores of these four levels were computed and compared in the analysis (Arousal scores for female characters on negative

emotions, arousal scores for female characters on positive emotions, arousal scores for male characters on negative emotions, and arousal scores for male characters on positive emotions). A Three-Way Repeated Measures ANOVA examined the effects of culture (masculinity and femininity), gender (male and female), and valence (positive and negative) on arousal of emotions in comics. Specifically, the analysis investigates whether comics originating from cultures characterized as more masculine differ in the depiction of the arousal of emotion compared to those from more feminine cultures. Additionally, it is tested if the effect of gender on arousal, as well as the moderation effect of cultural characteristics, contribute to variations in arousal.

## Results

A Two-Way Repeated Measures ANOVA (2x2) was performed to assess the influence of culture and gender on valence in comics. The analysis revealed that valence levels do not differ between cultures  $F(1, 93) = 0.41, p = .53, \eta_{\text{partial}}^2 = 0.004$  (trivial), nor between genders  $F(1, 93) = 2.15, p = .15, \eta_{\text{partial}}^2 = 0.023$  (small). As this meant valence scores between female and male characters within and across cultures did not differ statistically, it did not support the hypothesis 1a and 2a. There was also no interaction effect between culture and gender on valence levels  $F(1, 93) = 0.40, p = .53, \eta_{\text{partial}}^2 = 0.004$  (trivial), thereby failing to support hypothesis 3a.

Next, a Three-Way Repeated Measures ANOVA (3x2x2) was performed to explore the combined influence of valence, gender, and cultural characteristics on arousal in comics. Culture appeared to have no effect on arousal of emotion in comics, as the analysis showed no significance  $F(1, 37) = .05, p = 0.83, \eta_{\text{partial}}^2 = 0.001$  (trivial). This result suggests that arousal does not differ between cultures, thus not supports hypothesis 1b.

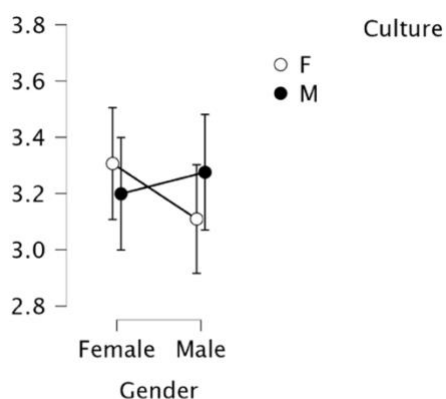
With that, arousal scores did not exhibit differences between male and female characters in the analyzed comics either  $F(1, 37) = 1.38, p = 0.25, \eta_{\text{partial}}^2 = 0.04$  (small). This indicates that arousal scores appear to be consistent across both male and female characters, providing no support for hypothesis 2b.

Furthermore, it was examined whether culture moderates the relationship between gender and arousal. The arousal for gender did differ based on the cultural context  $F(1, 37) = 4.80, p = .035, \eta_{\text{partial}}^2 = 0.12$  (medium), shown in Figure 2. However, subsequent Post Hoc tests did not identify specific pairwise differences, indicating that the data do not strongly support the hypothesized moderation effect in hypothesis 3b. The results of the Post Hoc Comparisons are shown in Table 1. This raises the possibility that further investigation or consideration of additional factors is necessary to gain a more nuanced understanding of the

intricate relationships between cultural characteristics, gender, and arousal in the context of comics.

**Figure 2**

*Moderating effect Culture x Gender on arousal*



**Table 1**

*Post Hoc Comparisons for Culture x Gender on arousal*

**Post Hoc Comparisons - Culture \* Gender**

|           |           | Mean Difference | SE    | t      | Cohen's d | p <sub>holm</sub> |
|-----------|-----------|-----------------|-------|--------|-----------|-------------------|
| F, Female | M, Female | 0.107           | 0.151 | 0.713  | 0.182     | 1.000             |
|           | F, Male   | 0.197           | 0.094 | 2.103  | 0.334     | 0.254             |
|           | M, Male   | 0.031           | 0.151 | 0.206  | 0.052     | 1.000             |
| M, Female | F, Male   | 0.090           | 0.151 | 0.596  | 0.152     | 1.000             |
|           | M, Male   | -0.076          | 0.082 | -0.928 | -0.130    | 1.000             |
| F, Male   | M, Male   | -0.166          | 0.151 | -1.103 | -0.281    | 1.000             |

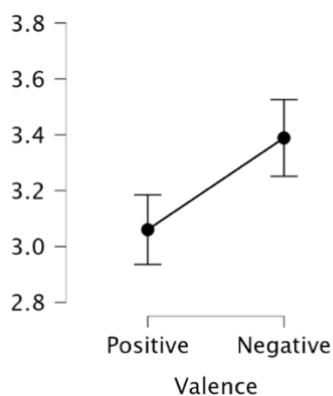
*Note.* P-value adjusted for comparing a family of 6

*Note.* Results are averaged over the levels of: Valence

However, when culture or gender are not considered, the arousal scores for comics with negative valence did differ from the arousal scores for comics with positive valence  $F(1, 37) = 13.07, p < .001, \eta_{\text{partial}}^2 = 0.26$  (medium). A subsequent Post Hoc analysis provided deeper insights into these differences, indicating a mean difference of  $-0.33$  ( $SE = 0.09$ ),  $t = -3.62$ , Cohen's  $d = -0.56, p < .001$ . This negative mean difference suggests that, on average, comics portraying emotions with positive valence had lower arousal scores compared to those depicting emotions with negative valence, supporting hypothesis 4. This main effect is shown in Figure 3.

**Figure 3**

*Main effect of Valence on Arousal*



Overall, there were no significant differences observed in valence or arousal between cultures in the analyzed comics, providing no support for hypothesis 1. Similarly, there were no significant differences between male and female characters in valence or arousal, failing to support hypothesis 2. Although a moderating effect of culture on the relationship between gender and arousal was noted, Post Hoc tests did not reveal specific pairwise differences. Additionally, no significant moderating effect of culture on the relationship between gender and valence was found. This indicates a lack of concrete evidence to support hypothesis 3.

## Discussion

This study explored the complex relationship between culture, gender, and emotional portrayal within comics, seeking to answer the overarching question: Do comics differ in the ways they depict the emotions (valence, arousal) of characters of different genders across cultures? These findings contribute to academic discussions on how culture, gender, and emotions intersect in comics, offering valuable insights for further research and nuanced exploration in the dynamic field of comics.

The influence of culture on the portrayal of emotions in comics is examined, starting with valence. Contrary to our initial expectations, the analysis revealed no significant variation in valence between comics from cultures characterized as more masculine or feminine. While our hypothesis was based on broader theorizing, indicating that comics draw inspiration from cultural surroundings, turning societal values, traditions, and norms into visual stories, the findings suggest a departure from this belief (Magnussen & Christiansen, 2000; McCloud, 1994). Overall, the findings indicate that, at least in the context of emotional valence, comics do not conform rigidly to cultural expectations related to masculinity or femininity. Furthermore, the analysis showed that culture did not affect the arousal of emotion either. These findings challenge traditional assumptions and align with Cohn's work (2020, 2023), emphasizing the need to move beyond universality assumptions in visual storytelling.

After establishing that culture does not influence emotional portrayal for both valence and arousal in comics, the potential influence of gender was examined. Recognizing the historical tendency of comics to conform to gender stereotypes, it was hypothesized that male and female characters in comics would exhibit distinct emotional valences. However, the results did not support this hypothesis, as no significant differences in valence were observed between male and female characters. These results contradict the historical tendency of comics to adhere strictly to gender norms (Bem, 1974; Cocca, 2020).

Building on from that idea, the arousal scores did not exhibit significant differences between male and female characters either, challenging the notion that gender alone dictates the intensity of emotions portrayed in comics. This aligns with our previous findings on the influence of gender on valence, where uniformity in emotional responses of male and female characters emerged. However, this observation also contradicts Lindsey's statement about traditional gender roles, which emphasizes societal expectations deeply ingrained in some cultures based on perceived gender (2020). What becomes apparent here is the transformative potential of comics, as argued by McCloud (1994) and Duncan et al. (2015). Despite historical tendencies and traditional gender roles, comics also serve as a platform for creators to break free from these established stereotypes, suggesting that the lack of significance could be attributed to this transformative potential.

As culture and gender individually have no significant effect on the emotional portrayal in comics, their interaction is considered. Though theories lead us to hypothesize that cultural norms dictate how men and women should express emotions within comics, gender-based variations in emotional valence are not significantly influenced by the cultural context (Bem, 1974; Mehrabian, 2017). Male and female characters depicted similar valence levels irrespective of whether they belonged to cultures characterized as more masculine or feminine. This implies that within the comics analyzed, cultural nuances do not distinctly shape the nature of emotional expression of male and female characters.

However, the exploration of whether cultural characteristics moderate the relationship between gender and arousal did reveal a significant effect, indicating that the association between gender and arousal varies based on cultural context. Surprisingly, post hoc tests did not identify specific pairwise differences, indicating a complex relationship. These findings question the idea that gender portrayal in comics reflects intricate societal norms related to attributes, roles, and behaviors associated with masculinity and femininity (Bem, 1974;

Butler, 1990; Cocca, 2020). In turn, the direct connection to Hofstede's framework appears less straightforward, prompting a call for further exploration of nuanced cultural influences on emotional portrayals in comics. This highlights the nuanced interplay of cultural characteristics, gender norms, and emotional portrayal in comics. The absence of clear-cut differences suggests consideration of additional variables that contribute to the complex relationships observed.

Examining the subtleties of emotion, Russell's model suggested that comics with positive valence would show distinct arousal scores compared to those with negative valence (1980). Confirming expectations, comics portraying valence had lower arousal scores compared to those depicting negative valence. This alignment with Russell's model highlights that valence serves as a crucial factor in determining arousal scores. This consistent relationship between valence and arousal extends across diverse cultural and gender contexts, suggesting a universal and generalizable concept. The uniformity in the emotional responses of male and female characters across cultures underscores the importance of valence as a primary driver of arousal, with gender and culture playing a less discernible role in shaping these dynamics within the analyzed comics. This result contributes significantly to a broader understanding of emotional representation in comics, emphasizing the robust and consistent interplay between valence and arousal.

### **Limitations and Future Directions**

It is crucial to recognize the limitations inherent in this study. The focus on a binary gender representation in comics, shaped by historical norms, constrains the examination of diverse gender identities. Future researchers are to contemplate expanding the study to include a wider range of gender expressions. Moreover, choosing a binary categorization for culture might overlook the nuances of cultural expressions. This might be a contributing factor to the lack of significance observed in the tests. This decision prompts the consideration of future

research exploring the impact of using a continuous distribution for cultural variables to better understand its effects on emotional depictions in comics. Furthermore, the study's reliance on a specific cultural dimension (masculinity vs. femininity) as defined by Hofstede's cultural dimensions necessitates consideration of other cultural characteristics or dimensions that might influence emotional portrayals. For instance, Hofstede's Power Distance dimension refers to the extent to which less powerful members of a society accept and expect that power is distributed unequally (Hofstede, 1998, 2001; Naumov & Puffer, 2000). In cultures with a high power distance score, there is a greater acceptance of hierarchical order, and individuals understand their "place" in the system. In contrast, cultures with a low power distance score tend to strive for equality and minimize hierarchical differences (Ly, 2013). Exploring the Power Distance dimension could offer insights into how hierarchical structures within a society influence the portrayal of gender roles and emotional expressions in visual storytelling. Moreover, while Hofstede's cultural dimensions were originally developed to assess work cultures, their widespread application to country cultures introduces an additional layer of complexity. Acknowledging this, future investigations would benefit from exploring alternative cultural dimensions or incorporating a more comprehensive cultural framework to capture the intricate dynamics of emotional representation in comics.

## **Conclusion**

In conclusion, this study provides valuable insights into the nuanced interplay of culture, gender, and emotion in comics. While the analysis did not reveal significant cultural or gender-based differences in emotional valence or arousal, the influence of valence on arousal emerged as a key determinant in the emotional dynamics of comics. Interestingly, the absence of clear-cut pairwise differences in the moderation effect of culture on gender-related arousal scores suggests a nuanced interplay that extends beyond simplistic categorizations.

This study shows that emotional portrayal in comics is complex, going beyond set cultural and gender norms. The influence of culture and gender on emotions in comics is part of a complex web of factors, making it hard to identify clear differences. Additionally, the study's focus on Hofstede's 'Masculinity vs. Femininity' dimension provides valuable insights but may only scratch the surface of the cultural influences at play.

Further investigation into additional cultural dimensions and factors influencing emotional portrayals is proposed, considering the dynamic nature of cultures and the evolving landscape of comics as a medium. This study contributes to the broader discourse on culture, gender, and emotions, sparking ongoing conversations about the dynamic role of visual storytelling in shaping societal perceptions.

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**Appendix A**  
**Overview of Comics in The Corpus**

| <b>Global</b> |                |                                         |                |
|---------------|----------------|-----------------------------------------|----------------|
| <b>Region</b> | <b>Country</b> | <b>Document Name</b>                    | <b>Culture</b> |
| Africa        | Angola         | Identidade Abandonada                   | F              |
| Africa        | Cameroon       | Lorphelin Et Le Livre                   | M              |
| Africa        | Congo          | Une Nuit De Rire Et D'Amour             | F              |
| Africa        | Congo          | Une Superbe Idee Pour Un Monde Meilleur | F              |
| Africa        | Congo          | Peau de Banane                          | F              |
| Africa        | Egypt          | Sniper(Al Kanass)                       | M              |
| Africa        | Ethiopia       | The Priest                              | M              |
| Africa        | Ghana          | Abena                                   | F              |
| Africa        | Ghana          | Breathe                                 | F              |
| Africa        | Ivory Coast    | Le Flic de Gnasville                    | F              |
| Africa        | Kenya          | Malkia                                  | M              |
| Africa        | Kenya          | Charlie Pele - Jenerali Magic           | M              |
| Africa        | Rwanda         | Confessions of an Introvert             | F              |
| Africa        | Tanzania       | Expectations!                           | F              |
| Africa        | Tunisia        | Burn Thread                             | F              |
| Africa        | Uganda         | Ganda                                   | F              |
| Africa        | Zimbabwe       | Grace                                   | F              |
| Africa        | Zimbabwe       | Shark Finn-1                            | F              |
| Africa        | Zimbabwe       | Simbi-Rise of The Machinist             | F              |
| Africa        | Zimbabwe       | Themba                                  | F              |

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|              |                |                                                |   |
|--------------|----------------|------------------------------------------------|---|
| Africa       | Zimbabwe       | Umzingeli-The African Bounty Hunter            | F |
| Africa       | Zimbabwe       | ParaDox                                        | F |
| Africa       | Zimbabwe       | Pause                                          | F |
| Central Asia | Kazakhstan     | 6People - Alti Adam 1                          | F |
| Central Asia | Uzbekistan     | Fair Friendship                                | F |
| Central Asia | Uzbekistan     | Message from Mom                               | F |
| East Asia    | China          | Ah Ah Ah!                                      | M |
| East Asia    | China          | Des Pekinois Pas Tres Civilises                | M |
| East Asia    | South Korea    | Mothers of all kinds                           | F |
| Europe       | Albania        | The Yankee Comandante                          | M |
| Europe       | Austria        | Today is the last day of the rest of your life | M |
| Europe       | Belgium        | Suske en Wiske                                 | M |
| Europe       | Belgium        | The Bluecoats                                  | M |
| Europe       | Belgium        | Lucky Luke - Daisy Town                        | M |
| Europe       | Belgium        | Blake and Mortimer - The Yellow "M"            | M |
| Europe       | Bulgaria       | Lucky                                          | F |
| Europe       | Bulgaria       | Gilgamesh                                      | F |
| Europe       | Cyprus         | Last Moments                                   | F |
| Europe       | Czech Republic | The Oysters of Time                            | M |
| Europe       | Denmark        | Marlene                                        | F |
| Europe       | Denmark        | My Beautiful Aunt                              | F |
| Europe       | Denmark        | Phantasm - The Death List                      | F |
| Europe       | Denmark        | Anepantla                                      | F |
| Europe       | Denmark        | The song we didn't know                        | F |
| Europe       | Estonia        | Little Warm Hearted Guest                      | F |

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|        |               |                                   |   |
|--------|---------------|-----------------------------------|---|
| Europe | France        | La planete encore                 | F |
| Europe | France        | Call me Nathan                    | F |
| Europe | Greece        | The last shop on the street       | M |
| Europe | Hungary       | Punk                              | M |
| Europe | Ireland       | Mactir                            | M |
| Europe | Ireland       | Marco the Demon Dude              | M |
| Europe | Netherlands   | Vincent                           | F |
| Europe | Netherlands   | Peter en de Wolf                  | F |
| Europe | Netherlands   | Eeuwig 1913                       | F |
| Europe | Netherlands   | Days of Sand                      | F |
| Europe | Poland        | Poselstwo do Gniezna              | M |
| Europe | Poland        | Tylko dla doroslych               | M |
| Europe | Portugal      | The Well by the House on the Hill | F |
| Europe | Russia        | Pirozhki                          | F |
| Europe | Russia        | Keshka                            | F |
| Europe | Slovakia      | Pan i Ples                        | M |
| Europe | Slovakia      | Moj Dedko Krokuje                 | M |
| Europe | Slovakia      | Radeks day full of eating         | M |
| Europe | Slovakia      | The Tale of Palko                 | M |
| Europe | Spain-Catalan | Lhome caiman                      | F |
| Europe | Spain-Catalan | La partida dAuale                 | F |
| Europe | Ukraine       | Jihad                             | F |
| Europe | Ukraine       | Random Number                     | F |
| Europe | Ukraine       | Gennady the Pigeon                | F |
| Europe | Ukraine       | Oasis                             | F |

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|             |                |                                              |   |
|-------------|----------------|----------------------------------------------|---|
| Europe      | United Kingdom | Ace Hart in Men of Rubber                    | M |
| Europe      | United Kingdom | Steve Larabee                                | M |
| Europe      | United Kingdom | The Losers                                   | M |
| Europe      | United Kingdom | Judge Dredd - Ratfink                        | M |
| Europe      | United Kingdom | Porcelain: A Gothic Fairy Tale               | M |
| Europe      | United Kingdom | Decomposition Jones                          | M |
| Europe      | United Kingdom | Bella At The Bar                             | M |
| Europe      | United Kingdom | In The Cold Dark                             | M |
| Europe      | United Kingdom | Justine-Messenger of Justice                 | M |
| Europe      | United Kingdom | Judge Dredd-Adios Rowdy Yates                | M |
| Europe      | United Kingdom | Megatropolis-5                               | M |
| Middle East | Iran           | Let your emotions out                        | F |
| Middle East | Jordan         | Snowball                                     | F |
| Middle East | Syria          | Barefoot                                     | M |
| Middle East | Syria          | Mudhamiyah                                   | M |
| Middle East | Syria          | The Cat                                      | M |
| Middle East | Syria          | Hallucination of a First Lady                | M |
| North       |                |                                              |   |
| America     | United States  | Strange Adventures - The Invisible Space-Dog | M |
| Oceania     | Australia      | Vowels                                       | M |
| Oceania     | Australia      | Cleverman                                    | M |
| Oceania     | New Zealand    | Sunshine                                     | M |
| Oceania     | New Zealand    | Rufus Marigold                               | M |
| Oceania     | New Zealand    | Share Cliff                                  | M |
| Oceania     | New Zealand    | Tsunami                                      | M |

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|            |             |                                    |   |
|------------|-------------|------------------------------------|---|
| South      |             |                                    |   |
| America    | Guatamala   | Heroe Nacional                     | F |
| South Asia | Bangladesh  | Horror (Didha)                     | M |
| South Asia | Bangladesh  | Horror (Ghun)                      | M |
| South Asia | Bangladesh  | Horror (Glitch)                    | M |
| South Asia | India       | The Witch and the Warrior          | M |
| South Asia | Nepal       | A Glimpse of the Past              | F |
| South Asia | Pakistan    | Basila & The Street Crew 1         | F |
| South Asia | Pakistan    | Mein Hero-ORANGI                   | F |
| South Asia | Sri Lanka   | Tikiri Leah                        | F |
| South Asia | Sri Lanka   | Best Friend                        | F |
| South Asia | Sri Lanka   | Armor                              | F |
| Southeast  |             |                                    |   |
| Asia       | Indonesia   | Timun                              | F |
| Southeast  |             |                                    |   |
| Asia       | Malaysia    | Jejon in Japan                     | M |
| Southeast  |             |                                    |   |
| Asia       | Malaysia    | Discourteous                       | M |
| Southeast  |             |                                    |   |
| Asia       | Myanmar     | Courage                            | F |
| Southeast  |             |                                    |   |
| Asia       | Myanmar     | Myanmar Silent Horror- Night Story | F |
| Southeast  |             |                                    |   |
| Asia       | Philippines | Last Hope                          | M |

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|           |             |                                                |   |
|-----------|-------------|------------------------------------------------|---|
| Southeast |             |                                                |   |
| Asia      | Philippines | Fluttering Fleeing and Freeing                 | M |
| Southeast |             |                                                |   |
| Asia      | Philippines | Serendipity - Pilot: Stroke of Luck            | M |
| Southeast |             |                                                |   |
| Asia      | Philippines | The Good Ones                                  | M |
| Southeast |             |                                                |   |
| Asia      | Thailand    | Can we be friends?                             | F |
| West Asia | Armenia     | 26 Needled Girl                                | M |
| West Asia | Armenia     | 40 Years of Silence                            | M |
| West Asia | Armenia     | Babies For Sale                                | M |
| West Asia | Armenia     | Boomerang                                      | M |
| West Asia | Armenia     | Hidden Talent                                  | M |
| West Asia | Armenia     | Moms Pakhlava                                  | M |
| West Asia | Armenia     | Mosquito                                       | M |
| West Asia | Armenia     | Varda                                          | M |
| West Asia | Armenia     | Veni, Vidi, Divisam (I came, I saw, I divided) | M |
| West Asia | Armenia     | Pressure                                       | M |

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