CHILDREN'S PORTRAYAL OF FALSE EMOTIONS AND MIMICRY

by

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Children's Portrayal of False Emotions and Mimicry

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ABSTRACT

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Abstract

Children must learn how and when to portray emotions for social communication and appropriate emotional responses to various social situations. The purpose of this study was to investigate under what conditions children can create forced emotions that are easily read by coders. The study investigates whether there are differences in children's false emotion portrayals when emotions are mimicked from a model or not mimicked, and whether there are differences if they have been modeled in a realistic manner or an exaggerated manner. This study is a secondary data analysis from a dataset that includes coder-scored data on the technical, emotional, and physical aspects of children's emotional portrayals. Participants were asked to create emotion portrayals for target emotions of hurt, sad, scared, and tired. The participants were given video models of three out of the four emotions and were asked to mimic as closely as possible, and then were asked to create their own portrayal for the fourth emotion. Data in the current study

focused on physical differences (e.g. hand gestures, Laban Effort analysis, overall physical engagement) and level of coded accuracy for each emotion portrayal. Results show that there are differences in physical engagement and hand gesture use based on whether the mimicked model was a realistic or exaggerated portrayal of the emotion.

CHILDREN'S PORTRAYAL OF FALSE EMOTIONS AND MIMICRY

Social situations are one of the ways in which humans are required to express emotions via facial expression and body movement. But, how do children learn to engage and use their faces and bodies to portray emotions appropriately matched to the current social situations they find themselves in? While emotional expressions mostly happen without conscious awareness (Winkielman & Berridge, 2004), through the unconscious imitation of another person's emotions (i.e. automatic mimicry) (Chartrand & Bargh, 1999) or through spontaneous displays of emotions that have been learned through social interactions with others (Gaspar & Esteves, 2012), the purposeful portrayal of appropriate emotions for particular situations often requires conscious bodily, facial, and vocal change (Konijn, 1997). This occurs in a variety of situations including pretending (Sidera et al., 2013), lying to protect the feelings of another individual (Talwar & Lee, 2002), and social demands from work for adults (Hochschild, 1979). In this thesis I review the literature on emotional mimicry, false emotional displays and the use of display rules, as well as body movements used in mimicked and non-mimicked emotional portrayals. Then, I present a study on false emotional portrayals from children and the accuracy of these portrayals when judged by adults dependent on different factors.

Emotional Mimicry

Mimicking an emotion is one way that humans identify what others are showing and create appropriate emotions for their current social situation (Hess & Fischer, 2014). Emotional mimicry occurs when a person is unsure of the emotional expression that needs to be created, therefore they imitate the expressions of others around them, this is often an unconscious process but can also occur consciously. For example, if someone were to walk into a room after scoring an A on a final exam, not knowing that the others in the room were experiencing the loss of a family member, the person who just passed their exam would identify the emotions of others in the room and recreate that emotion in order to uphold the social standards of that group. Emotional mimicry often happens spontaneously and automatically, and tends to happen more with positive emotions than negative emotions due to there being more productive goals associated with positive emotions. For instance, positive productive goals include maintaining happiness in a situation whereas negative emotions are not considered productive as they decrease the amount of positive emotions in a scenario (Duffy & Cartrand, 2015). Emotional mimicry encourages a social bond between the expresser and the viewer due to an increase in feeling others' emotions that comes with mimicking the emotion, an important skill for children in a variety of social situations throughout development (Saarni, 1989; Fischer et al., 2012). Other benefits of concurrent emotional mimicry include increased prosocial behavior, increased emotional recognition, and lower likelihood of prejudices towards the person being mimicked (Chartrand & Lakin, 2013). As shown in Stel et al., (2008) when adults were asked to mimic facial expressions from an advertisement about a charity organization, they were more likely to engage in prosocial behavior towards that

organization than adults who were asked to not mimic the facial expressions. Similarly, research by Musser et al., (2013) found that children with low prosociality due to previous diagnoses of attention-deficit/hyperactivity disorder showed increased prosociality and sympathy when asked to mimic an emotional scene. Emotional mimicry is an important part of emotional development that has been shown to have underlying social benefits.

However, emotional mimicry does not happen in the same way for all emotions and for all populations. Previous research has shown emotional valence differences, with positive emotions being created more accurately than negative emotions when mimicked (Grossard et al., 2018). Age differences were also observed where older children (around age 11) were more accurate in mimicking emotions (both positive and negative) than younger children (around age 6) (Grossard et al., 2018). These differences may be due to negative emotions being less socially desirable, therefore more difficult to create because they are seen less (Field & Walden, 1982).

Along with these differences, when emotions are mimicked regardless of valence, tend to have less accurate portrayals than emotions that are created spontaneously (Grossard et al., 2018; Bahreini et al., 2016). In research conducted by Bahreini et al., (2016) raters agreed participants were less accurate in mimicking negative emotions. When asked to mimic 100 emotions in order to test face recognition software, coders rated mimicked fear (agreeing 21.3% rated as accurate) and sad (26.7% rated as accurate) as being least accurate, whereas emotions such as happy and neutral were over 85% accurate. Fear was rated as the least accurate in mimicry, supported by earlier research

from Murthy (2009) that states that fear is an emotion that is least distinguishable from other emotions, especially when the emotion is forced and not spontaneous.

Emotional mimicry also has been shown to lead to less accuracy in the emotion portrayal when the emotion creators do not have a previously established relationship. In a study conducted by Fischer et al., (2012), adults were paired with people that were familiar to them or strangers and were asked to mimic the emotion of the other person. Results showed that emotions mimicked from a familiar person were more accurate in their portrayal than emotions mimicked from a stranger. Thus, if there is no previous social bond it is less likely that mimicked emotions will have an accurate portrayal of the target emotion.

In the current study, forced mimicry with no particular social function is asked of children, and the expresser is someone they are not familiar with. Therefore, the mimicry observed for this study is not emotional mimicry in a way that serves a social function. Therefore, it is hypothesized that emotions that are mimicked will have less accuracy than emotions that are not mimicked due to there being no particular social function or previous relationship established between the participant and the model.

The Display of False Emotions and Display Rules

When consciously mimicking an emotion, it is likely that the emotion is not what is currently being felt by the person, making these emotions false. These false emotions are typically used in social situations when it is beneficial to match the emotion of others instead of showing the emotion you are feeling. For instance, Talwar and Lee (2002) asked children to interact with adult research assistants that had a lipstick mark on their

nose. When the adult entered the room they prepared to take a picture and asked the child participant if they looked okay. They found that when a researcher appeared with a mark on their face, children would tell a prosocial lie to protect the adult's feelings and let them think they looked perfect for the picture. Children later admitted to telling the lie and told the adult they had a mark on their nose. The coders looked for physical expressions of lying based on eye contact, amount of smiling, position of mouth, confidence level, and tone of voice to determine if the child was telling a lie. Children ages 3-7 were managing their physical expression of emotions so that they can continue to lie about the appearance of someone else to protect their feelings. Directly related to this, Warneken and Orlins (2015) identified 5-7-year-old's white lie telling behavior related to the benefits of the other person. They found that 7-year-olds and some 5-year-olds are identifying the other's emotional states when deciding whether to tell the truth and would only do so if the outcome would be a positive emotional reaction.

This ability to alter an emotional expression in order to be appropriate for the situation you are in has been defined by Saarni (1979) as "display rules". Saarni (1979) states that we follow "guidelines for regulating the appropriateness of expressive behavior in various social situations" (p.424). Display rules are another form of false emotion portrayal than white lies but is also used in order to form relationships and mimic the emotions of others.

Research on display rules in children comes from the disappointing gift paradigm. In these studies, children were presented with a series of attractive and unattractive toys and asked to rate them as their most and least favorite. Children are then

given an unattractive gift and their reactions were observed. In this research, we see that children have the ability to hide their current emotion of disappointment and externally display a positive emotion which is more appropriate for the given situation (Williams et al., 2015). These outcomes are similar to those of the Talwar and Lee (2002) results, where children were telling adults white lies to spare their feelings. These similar outcomes justify children's ability to consciously control their negative internal emotions to express an external positive emotion for the sake of the current social situation.

Variations in Emotion Portrayal: Exaggerations and the Use of Body Movements

When an emotion is false or is not being currently felt by the expresser (e.g. acting, roleplaying, hiding other emotions), exaggerating the emotion expression is likely to happen. Previous research shows that exaggeration of emotions is an emotion regulation technique (Demaree et al., 2004; Schmeichel, 2007; Jackson et al., 2000). These situations are similar to the disappointing gift paradigm and the use of display rules in order to match the emotional situation. When adult participants were asked to exaggerate their reaction to an emotional clip, participants' ratings of arousal matched the emotional valence of the clip compared to when participants were asked to watch the clip without reacting (Demaree et al., 2004). The current study plans to analyze this behavior in human emotion recreation by whether or not the emotion can be correctly identified by blind coders if the emotion is over exaggerated rather than portrayed realistically.

Exaggerated emotion portrayals have typically been studied through animated characters or artificial intelligence. Le Ngo et al., (2016) found that, when testing levels of magnification in emotion recognition software, as exaggeration increased, so did

accurate recognition of the emotion. However, Makarainen et al., (2014) found that adults rated emotions as less familiar when emotions of animated characters were exaggerated. Though previous research on emotion recognition for human exaggeration is lacking, the current study plans to identify differences in emotions of hurt, sad, scared, and tired when they are being mimicked from a realistic model or a model of an exaggerated portrayal. From previous research it is predicted that emotion recognition by adults will be higher for emotions when they are not being mimicked and when they are portrayed in a realistic manner.

When thinking about emotion portrayals, facial expressions are used along with overall body movement. As shown by Wegryzn et al. (2017), adults are able to accurately recognize and label portrayal of the emotion happy more than sad, angry, fearful, disgusted, or surprised when looking at overall body posture. When asked to identify emotions while a slow unmasking of the facial expression took place, adults did not need to wait for the face to be fully unveiled before being able to correctly identify the emotion when the eyes and mouth regions were shown. Body movements can be measured in different ways, for instance, Laban Movement Analysis, hand gestures, and overall physicality.

Laban Movement Analysis (LMA) is used to describe movement that is being observed. Often used in dance therapy and dance choreography, LMA can measure emotions in four categories: body, effort, shape, space. When discussing emotional aspects of movement, Effort is typically focused on. “Effort is the inner attitude towards a motion factor” (p.324) and is used to teach acting students to change between emotional

states. Laban Effort measures emotions on how direct or indirect, strong or weak, sustained or sudden, and free or bound the movement is. For instance, punching and grabbing an object have similar movements, but the intensity and strength of the movement are key defining pieces to labeling the correct movement (Wodehouse & Sheridan, 2014). Laban Movement Analysis can be an important tool used when observing emotions because the observer does not have access to the inner thoughts and feelings of the person creating the emotion. Through observing emotions, empathy is triggered which allows us to better connect with the person and understand the emotion. This is done through mirror neurons that are activated which in turn can create the same experience for an observer as the creator (Payne, 2017).

As an example of LMA, Crane and Gross (2013), asked adults to portray one of five target emotions (anger, sad, joy, content, and neutral) while walking and self-report if the emotion portrayal was one that was felt (i.e. a real emotion) or one that was not felt (i.e. a false emotion). These reports showed that 97% of anger, joy, and sadness, 95% of content, and 67% of neutral portrayals were considered felt. Each portrayal was coded using the Laban Effort Shape Analysis characteristics by 60 adult participants who did not act out an emotion portrayal while walking. Each emotional target had its own specific Laban Effort shape analysis, but some emotions were similar to others. For instance, anger and joy had similar effort shape characteristics; content and neutral are similar, and finally sadness had its own unique characteristics.

Along with the way we move our bodies in intensity measured through Laban effort analysis, hand gestures are also found to play a role in how humans create

emotions. Foundational emotion gesture research conducted by Wallbott (1998) shows that there is a difference in the ways hand gestures are used for different emotions. More specifically, emotions such as anger, joy, and fear showed closing and opening movements of hands that are specific to the target emotion portrayal. This has also been shown by more recent research by Kipp and Martin (2009) (and also Noroozi et al., 2018) showing that positive and negative emotions have different uses of hand gestures when being portrayed. Coding theatre plays, it was shown that when an actor was portraying a positive emotion (e.g. high pleasure or relaxation) more use of their left hand occurred. However, for more negative emotions (e.g. low pleasure or hostility) more use of their right hand occurred (Kipp & Martin, 2009). While the current study does not contain information on which hands were used to assist in emotion portrayal, previous research shows that differences in hand gestures do occur in the portrayal of positive versus negative emotions. The current study analyzes if differences also occur when an emotion is portrayed exaggerated or more realistically.

Along with focuses on specific body movements in the face and hands, emotions can also be recognized by general overall body use. This is often studied in previous research as body posture and gestures (Montepare, et al., 1999; Glowinski et al., 2011; Aviezer et al., 2012). However, previous research has also shown that each emotion is distinguishable from other emotions based on bodily expression (Dael et al., 2012 and de Meijer, 1989). When an emotion cannot be distinguished by facial expression alone, body movement can help decipher the meaning of the emotion. For example, when adults were shown emotions of losing and winning, they were more accurate at rating intensity and

meaning when looking at both face and body movement versus seeing facial expression alone (Aviezer et al., 2012). Body movements are a key component in emotion recognition, but are there certain situations where body movements may not relate to the true emotion?

For instance, when unconsciously mimicking an emotion, overall body movement is similar to that of the original portrayer of the emotion. However, when consciously mimicking an emotion, less similarities occur (Hatfield et al., 1993 and Dael et al., 2012). Research has also shown that intentionally mimicking body movements is less accurate than spontaneously mimicking emotions. When asked to intentionally imitate a model on a video screen, adults would respond slowly and have mistakes in their imitation of simple movements (e.g. tilting head, moving legs, moving arms, and straightening arms), regardless of which side of the body they were asked to copy (Heyes & Ray, 2004). However, when looking at children's imitation of a model's actions, the children tend to imitate all actions they see, even when asked not to (Whiten, 2005; Lyons et al., 2007). With this support, emotions imitated from a model by children would have a higher usage of body movement. Previous research has focused on the use of body movement in adults while portraying emotions, but very little is known about how children are using body movement. The current study plans to identify ways in which a child (6-8 years old) uses other parts of their body to portray an emotion by assessing overall body use, Laban Effort Shape analysis, and hand gestures.

Judged Accuracy in Emotion Portrayals

Not only is it important in development for a child to be able to create emotions but it is also important that others can correctly identify that emotion. Portraying emotions that can be accurately identified by others allows for relationship building, empathy, and other benefits mentioned previously from Chartrand and Lakin (2013). Research from Fong et al., (2020) shows that children who are creating emotions on cue rather than spontaneously are rated as less accurate by adult coders. Results showed that accuracy increased for older children (6 years old), specifically for emotions of sadness and fear.

Previous research has shown that adults are more accurate in recognizing emotion expressions when labels were provided and they were able to match a label to the expression (Lindquist & Gendron, 2013). In the current study, coders were not provided with options when observing the emotion portrayal but were instead asked to answer freely as to what they thought they were seeing. Unless the child explicitly stated the emotion as part of their creation, the adult coders had no language cue to use. Therefore, there had to have been other cues that allowed for accurate recognition of these emotions.

Adults often look at a person's overall body posture in order to identify an emotion when they cannot do so from facial expression alone. This has been supported by research by Coulson (2004) when looking at overall body use in emotion expression and how this affected a person's ability to recognize the emotion. When facial expressions were taken away from the image of the computer simulated emotion, undergraduate students were able to accurately label anger, happy, and sad emotions by just looking at overall posture from the computer simulated emotions. The focus on

overall body posture and engagement is supported even when vocal cues are associated with the portrayal. Previous research has shown that vocal cues are the strongest aids in identifying an emotion, second to facial expressions (Nelson & Russell, 2011). However, in Van den Stock et al., (2007) adult participants were able to correctly identify emotions (fear, sad, anger, happy) when not provided with verbal labels and only given body posture and use with facial expressions was blurred. When using body expressions, sadness was identified most correctly out of the four emotions and fear being the least recognizable. Similar results were shown when the body posture was paired with the facial expression. Previous research shows support for body expressions or posture being an important aspect of emotion recognition when emotional expressions contain the body movements specific to the target emotion.

The Current Study

Overall, there are many different ways in which a person can accurately identify an emotion, mainly focusing on physical expressions. There are also many ways in which a person can activate parts of their body to portray an emotion. In the current study coders are asked to identify emotions based off of overall physical expressions of the child participants. In order for the adult coders to accurately recognize an emotion, the child must engage in particular physical expressions in their face and overall body use specific to each emotion they are portraying. The emotion portrayed also needs to be portrayed in a manner that can be exaggerated but not overly exaggerated in ways that become considered strange.

The current study is unique in that it looks at differences in mechanisms used to mimic and create false emotions as well as how that is being read by an adult coder who is blind to the study. Differences in hand gestures, Laban Effort analysis, and overall body movement will be analyzed based on when emotions are mimicked and when they are shown as realistic or exaggerated.

Hypotheses:

(H1) Emotions will be more accurately coded by adult coders when the emotion is not being mimicked from a video model, versus when it is being mimicked. Previous research by Grossard et al., (2018) show that when children are mimicking positive emotions they are more accurately portrayed than negative emotions. Since the emotions portrayed in this study are considered negative emotions (sad and scared) or are related to negative emotions (hurt and tired) (Aviezer, Trope, & Alexander, 2012; Eisenberg et al., 1999; Fabes, Poulin, Eisenberg, & Madden – Derdich, 2002; Jin, Fraustino, & Liu, 2016; Kappessera, & de Williams, 2002; Kim et al., 2007; Nezlek, & Kuppens, 2008; Sills-Campbell, Barlow, Brown, & Hoffman, 2006) it is expected that there will be higher accuracy in emotion portrayals when coded by adults blind to the study when not mimicked.

(H2) Emotion portrayals that are mimicked will have more total physical engagement in the creation than emotions that are not being mimicked. Research conducted by Moody et al., (2018) shows that when adults were asked to mimic a picture model of an emotion, they were not only mimicking facial expressions but were engaging other body parts, such as arms, in order to portray the emotional mimicry. Previous research focusing on

children finds that children accurately imitate all body movements they see when asked to imitate a video model, including movements they are asked to not imitate (Lyons et al., 2007).

(H3) there will be differences in the amount of accurate coding based on which emotion the child is portraying, specifically hurt and sad emotions would be more accurately read by adult coders than scared and tired. Research conducted by Gross et al., (2011) show that when observing emotions, adults are better at recognizing negative emotions over positive emotions. For adults to accurately recognize an emotion, it is also important for the expresser to accurately portray the emotion. Older children around the age of 7-9 years old, show better accuracy in creating emotion portrayals of sad and scared, whereas younger children around the age of 4-6 years old show more accuracy for happy and least accurate for sad and scared (Fong et al., 2020). Since the children in the current study are between the ages of 6-8 years old, based off of previous research they will have more accuracy in portraying sad and scared versus hurt and tired. Likewise, (H4) emotions created in the realistic condition will be more accurately coded by adults than emotions portrayed in the exaggerated condition. Previous research by Murphy et al., (2010) shows that older adults are better at identifying spontaneous emotions rather than posed emotions. While the emotions in the current study are all posed emotions, it is assumed that emotions in the realistic condition are closely related to the portrayal of a spontaneous emotion.

(H5) Total physical engagement will also differ based on which emotion is being created, specifically more total physical engagement for hurt and scared emotions rather than sad

and tired. Based off of previous research, it has been shown that each emotion expression has a different type of movement and an engagement of different body parts (Dael et al., 2012). Previous research also shows that sad emotions tend to lack in action where as emotions such as happy and angry are full of action (Montepare et al., 1999). However, no previous research has looked at total physical engagement for the specific emotions of hurt, sad, scared, and tired.

(H6) there will be a difference in amount of hand gesture use depending on if the child is in the realistic versus the exaggerated condition. Foundational emotion gesture research conducted by Wallbott (1998) shows that there is a difference in the ways hand gestures are used for different emotions. This has also been shown by more recent research by Kipp and Martin (2009) showing that positive and negative emotions have different uses of hand gestures when being portrayed. Assuming that emotions created in the realistic condition will be most like spontaneous emotional displays, there will be more hand gesture use in the emotions created in this condition versus in the exaggerated condition.

(H7) Emotions created in the exaggerated condition will have a difference in use of Laban Effort movement, specifically there will be more direct versus indirect and more strong versus light Laban effort aspects in their portrayal than in the realistic condition. This hypothesis was formed based on research from Wodehouse and Sheridan (2014) describing differences in emotions which lie in the intensity and strength of an emotion. Children in the exaggerated condition have seen overly exaggerated portrayals of these emotions, assuming they are using this model as a way to create their own portrayal,

there will be an increase in intensity (strong versus light) in their exaggerated emotion portrayal.

Laban effort categories of time (sudden versus sustained) and flow (bound versus free) were not reliable between the coders on this study. Therefore, only space (direct versus indirect) and weight (strong versus light) were used in this analysis for the use of Laban Effort movement in the emotion portrayals.

Method

Participants

Participants were recruited from a previously existing database that includes families who had previously agreed to participate in developmental research, focusing on a childhood population. This sample consisted of 30 child participants,13- 6 year olds, 14- 7 year olds, 13- 8 year olds.

Procedure

Participants were guided through exercises (e.g. hand jive, dances from a video, jumping jacks, and copying facial expressions from pictures) led by a researcher to allow the children to become accustomed to performing in front of a camera. Participants were then shown three short (<5 second) videos and instructed to copy the video after it had ended. Children were randomly assigned to one of two groups, the “exaggerated” condition and the “realistic” condition. The “exaggerated” condition videos showed adults acting out a short emotional scene, these were overacted and not a realistic portrayal of the emotion. For example, a child was shown a video of an adult actor pretending to drop a glass of water and is feeling sad about this action, a video prompt of

"Now you try!" is displayed after the video. The "realistic" condition videos showed the same adults acting out the same short emotional scene, but were considered to be portrayals that are typically observed in the world. Each child was shown three emotions of realistic or exaggerated based on their randomly assigned condition, the condition remained the same for each emotional video shown to the child. Children were instructed to copy the acting of the model within the video as closely as possible. Participants were shown three out of four emotional targets: hurt, sad, scared, or tired and then asked to try it on their own and mimic the emotion portrayal. The child would then act out the scene in the video just as they had seen it, this happened for the first three emotional scenes. The last emotion shown to children was randomly assigned to each child and was the emotion that the child has not seen in a video model yet. . For this last emotion, children were given a prompt on the screen (e.g. "Now you try: Scared of a mouse") but no video model was shown this time, therefore these emotions were not mimicked.

Data were coded by two blind coders for whether the child was acting realistically or in an exaggerated manner, and three aspects of the portrayal: technical (e.g. is the emotion named by the child and in how many words), emotional (e.g. strength of emotion portrayed; was the child using a realistic or exaggerated portrayal style; how emotionally engaged is the portrayal), and physical (e.g. how much physical movement was used in the portrayal; did the child use hand gestures and/or facial expressions, if so how much?). Each coder viewed every participant's creation of mimicked and non-mimicked emotions, therefore each coder viewed and coded approximately 120 videos (30 children creating 4 different emotions). Specifically related to the seven hypotheses

previously stated, coders answered multiple questions while viewing each video: What emotion is displayed? What were the different Laban Movement Analysis categories (direct vs indirect, strong vs weak, sustained vs sudden, free vs bound)? How much did the child use hand gestures? How much total physical engagement did the child have?

Results

(H1) Emotions will be more accurately coded by adult coders when the emotion is being mimicked from a video model versus when it is not being mimicked,

A series of one-way ANOVAs were conducted with mimic condition (i.e. mimicked or not mimicked) as the independent variable and percent of accurate coding for each emotion as the dependent variable for each emotion type portrayed (i.e. hurt, sad, scared, tired). There were no significant differences in the amount of accuracy for hurt, $F(1, 42) = 2.545$, $p = .118$ ($M_{mimic} = .250$, $M_{nonmimic} = .500$); sad, $F(1, 40) = .030$, $p = .864$ ($M_{mimic} = .290$, $M_{nonmimic} = .318$); scared $F(1,38) = 2.002$, $p = .165$ ($M_{mimic} = .228$, $M_{nonmimick} = .450$); or tired, $F(1, 40) = .051$, $p = .822$ ($M_{mimic} = .338$, $M_{nonmimick} = .300$) *See tables 1.1-1.4.*

(H2) Emotion portrayals that are mimicked will have more total physical engagement in the creation than emotions that are not being mimicked,

A series of one-way ANOVAs were conducted with mimicry condition (i.e. mimicked or not mimicked) as the independent variable and total physical engagement for each emotion (i.e. hurt, sad, scared, tired) as the dependent variable. There was significantly more total physical engagement for Hurt (F (1,42) = 6.257, $p = .016$ ($M_{mimic} = 3.29$, $M_{nonmimic} = 3.94$) , Sad ($F(1,41) = 10.766$, $p = .002$, $M_{mimic} = 3.16$, $M_{nonmimic}$ =

4.42), and Tired ($F(1,41) = 6.267$, $p = .016$, $M_{mimic} = 3.12$, $M_{nonmimic} = 4.08$) There was not a significant difference in total physical engagement for scared ($F(1, 41) = 2.894$, $p = .096$) portrayals when mimicked (M=3.25) or not mimicked (M=3.92). *See tables 2.1-2.4.* (H3) there will be differences in the amount of accurate coding based on which emotion the child is portraying specifically hurt and sad emotions would be more accurately read by adult coders than scared and tired and (H4) emotions created in the realistic condition will be more accurately coded by adults than emotions portrayed in the exaggerated condition.

A mixed within (emotion) – between (condition) ANOVA was conducted with percent correct for each emotion as the dependent variable. Mauchly's test of Sphericity showed that there was a violation of sphericity indicating that the differences between variances between emotions were not equal, $\chi^2(5) = 23.952$, $p < .001$. Therefore, a Greenhouse-Geisser correction was used in order to inflate the p-value to appropriately reflect the sample's variances. There were no significant differences in children's portrayals for coders to accurately label the emotions, $F(2.118, 76.262) = .286$, $p = .76$ $M_{hurt} = .316$, $M_{sad} = .302$, $M_{scared} = .298$, $M_{tired} = .338$ Though the overall omnibus test determining if there were any differences in coding for different emotions was not significant, simple contrast tests were conducted in order to see differences in comparing hurt and scared emotion portrayals as well as sad and tired since the focus of this test was to observe differences between emotions in accurate portrayal. Tests of within subjects contrasts were conducted in order to identify any differences in portrayals for each emotion compared to another emotion. Contrasts show there was no significant difference

between Sad and Tired, $F(1,36)=.627$, $p=.434$, and no significant differences between Hurt and Scared $F(1, 36) = .172$, $p = .681$. Results showed that this hypothesis stating that there would be differences in the amount of accurate coding by blind coders for each emotion portrayed (i.e. hurt, sad, scared, tired) was not supported. There were no particular differences in the amount of accurate coding based on which emotion the child was portraying.

Results showed no significant difference between conditions for accurate emotion portrayal $F(1,36) =.270$, $p=.606$ for hurt ($M_{real} = .333$, $M_{exaggerated} = .300$), sad (($M_{real} = .250$, $M_{exaggerated} = .350$), scared (($M_{real} = .250$, $M_{exaggerated} = .342$) or tired (($M_{real} = .269$ $M_{exaggerated} = .400$)Therefore, children were no better at emotion portrayals when in the acting condition versus when in the pretend condition. *See table 3.*

To summarize, children were no better at portraying one emotion over another nor did they differ when the emotions were compared based on whether they were being portrayed in a realistic manner versus an exaggerated manner (i.e. the child's condition of acting versus pretend).

(H5) Total physical engagement will also differ based on which emotion is being created, specifically more total physical engagement for hurt and scared emotions rather than sad and tired

A mixed ANOVA was conducted with total physical engagement for each emotion as the within subjects variable and the condition the child was in (e.g. realistic versus exaggerated) as the between subjects variable. Sphericity was assumed through Mauchly's test of sphericity showing that differences in variances between emotions

were equal, $\chi^2 = 10.166$, $p = .071$. There were no significant differences in children's use of total physical engagement based on which emotion they were portraying, $F(3,117) = .296$, $p = .829$, ($M_{hurt} = 3.45$, $M_{sad} = 3.52$, $M_{scared} = 3.45$, $M_{tired} = 3.33$). *See table 4.*

Results showed that this hypothesis expecting there to be differences in total physical engagement based on which emotion is being portrayed was not supported. Therefore, based on coders' observations and rating of total physical engagement, there were no significant differences between emotions portrayed. However, there are significant differences in total physical engagement depending on if the child is in the realistic ($M_{hurt} = 3.24$, $M_{sad} = 3.39$, $M_{scared} = 3.29$, $M_{tired} = 2.88$) versus exaggerated ($M_{hurt} = 3.68$, $M_{sad} = 3.67$, $M_{scared} = 3.63$, $M_{tired} = 3.80$). condition, $F(1,39) = 4.726$, $p = .036$. For all emotions, there was a higher use of total physical engagement for emotions created in the exaggerated condition than in the real condition.

(H6) there will be a difference in amount of hand gesture use depending on if the child is in the realistic versus the exaggerated condition

A mixed ANOVA was conducted with hand use for each emotion (i.e. hurt, sad, scared, tired) as the within subjects variable and condition (i.e. realistic versus exaggerated) as the between subjects variable. Mauchly's test of Sphericity showed that there was a violation of sphericity indicating that the differences between variances between emotions were not equal, $\chi^2(5) = 12.122$, $p = .033$. Therefore, a Greenhouse-Geisser correction was used in order to inflate the p-value to appropriately reflect the sample's variances. There were no significant differences in the amount of hand gestures used depending on which emotion was being portrayed, $F(2.447, 95.414) = .227$, $p =$

.839, (M_{hurt} = 3.42, M_{sad} = 3.45, M_{scared} = 3.39, M_{tired} = 3.26) *See table 5.* However, in support of this hypothesis, there were significant differences in hand gesture use based on condition, $F(1,39) = 4.833$, $p = .034$, specifically more hand use for emotions created in the exaggerated condition (M_{hurt} = 3.65, M_{sad}=3.75, M_{scared} = 3.58, M_{tired}=3.78) than in the realistic condition (M_{hurt} = 3.19, M_{sad} = 3.15, M_{scared} =3.21, M_{tired} = 2.75).

(H7) Emotions created in the exaggerated condition will have a difference in use of Laban Effort movement, specifically they will be more direct and more strong in their portrayal than in the realistic condition.

Two mixed ANOVAs were conducted with the Laban facet (i.e. direct or strong) as the within subjects factor and the child's condition (i.e. realistic or exaggerated) as the between subjects factors. There were no significant differences in the amount of Laban Direct movement in an emotion portrayal for emotions in the realistic (M_{hurt} = 2.29, M_{sad} = 2.33, M_{scared} = 2.36, M_{tired} = 2.45) or the exaggerated (M_{hurt} = 1.90, M_{sad} = 2.21, M_{scared} = 2.15, M_{tired} = 2.10) condition., $F(3,117)=.321$, $p= .81$ .Based on Mauchly's test of sphericity, there was not a violation of sphericity to be corrected, $\chi^2 = 4.603$, $p = .466$. *See table 6.1.*

Likewise, there were no significant differences in the amount of Laban Strong movement in the portrayal of an emotion depending on if the child was in the realistic (M_{hurt} = 2.51, M_{sad} = 2.71, M_{scared} = 2.63, M_{tired} = 2.83) or exaggerated (M_{hurt} = 2.22, M_{sad} = 2.28, M_{scared} = 2.49, M_{tired} = 2.21) condition, , $F(3, 117) = .868$, $p =.460$, sphericity assumed $\chi^2 = 5.284$, $p = .382$. *See table 6.2.*

Discussion

The purpose of this study was to identify scenarios in which children may show differences in their accurate portrayals of emotion. These scenarios included when children are creating false emotions and they are mimicking a model. Also included was whether a child mimics an emotion more accurately if it is portrayed in an exaggerated or realistic manner. I looked for differences in the accuracy as judged by adult coders who were blind to the study being able to identify the target emotion, and coded for physical aspects such as hand gestures, Laban Effort analysis, and overall body engagement. From previous research, seven hypotheses were formed:

1. Emotions not mimicked will be coded as accurate than not mimicked
2. Mimicked emotions will have more total physical engagement than non-mimicked emotions
3. Hurt and sad emotions will be coded as accurate more than scared and tired
4. Emotions created in the realistic condition will be more accurately coded by judges than emotions in the exaggerated condition
5. Hurt and scared emotions will contain more total physical engagement than sad and tired portrayals
6. Emotions created in the realistic condition will have more hand gesture use than the exaggerated condition
7. Emotions created in the exaggerated condition will be coded as having more direct and more strong Laban effort aspects than emotions in the realistic condition.

Out of the seven hypotheses stated, results show support for none of the mentioned hypotheses. However, significant results were shown through these analyses for other conditions. For instance, emotions that are not mimicked contain more total physical engagement than emotions being mimicked, specifically for hurt, sad, and tired emotions but not scared. The current study adds to this literature by showing that when children did not mimic emotions they engaged in more total physical engagement than when they did mimic a video model. This could be because the child is unsure of what is needed for the emotion portrayal so they are engaging as many body parts as possible to communicate this emotion. From another perspective, the child may understand what is needed for that emotion, but they are engaging in creativity in order to portray an emotional scene as was shown to them in the previous three emotions. This could result in using more total physical engagement as they are creating something on their own in a way they think would be beneficial for others to understand that particular emotion.
The second significant result was that when emotions were created in the exaggerated condition more hand gesture use was coded than emotions in the realistic condition. This is in line with previous research showing that differences in hand gesture use is observed in emotion portrayals (Wallbott,1998 ; Kipp and Martin, 2009). Although included in the original seven hypotheses, results showed that more total physical engagement was also observed for emotions that were created in the exaggerated condition versus the emotions created in the realistic condition. Here, it is logical to think about an increase in physical engagement when an emotion is exaggerated. When exaggerating and overacting an emotion, over emphasizing movements is what most likely communicates the

exaggeration, although this needs to be focused on in future research. Likewise, if there is increased use in total physical engagement, an increase in hand gestures is also logical, although this was not hypothesized.

For hypotheses that were not supported, a number of reasons could be true as to why these analyses were non-significant. Amount of total physical engagement and Laban Effort analyses in mimicked emotions depend on the amount of physical engagement in the model. Therefore, a comparison to the adult model would be necessary to evaluate how much physical engagement is used for each of the target emotions by the adults. This could also be true for the accuracy of the portrayals to the coders, there is no previous research on this dataset that shows the coders were able to also identify the modeled emotional videos without the target being labeled. Assuming the children mimicked the models they saw, results of this study reflect the models' use of physical engagement and hand gestures for mimicked emotions, not necessarily the child's understanding of how much physical engagement should be used. Future research should continue to analyze this difference as this could have implications on teaching acting techniques (e.g. when asked to exaggerate an emotion, use more overall body engagement). This research could also have implications for how we teach children emotion portrayals. If children are needing to engage more body parts in a non-mimicked emotion portrayal because they are unsure of the importance of specific body movements, then we should be focusing on teaching overall body movement of emotion rather than an emphasis on facial expression as is typically seen in preschool classrooms.

Limitations

Limitations to this study include that it was a secondary data analysis, therefore I did not have control of original data collection. This limited the amount of observations of mechanisms that were used in the emotion portrayals. Ideally, the study would have data on usage of all body parts as the focus of this study was on physical mechanisms used in recreating the emotions. Observations could have included differences in eye regions, arm and leg positions as well as the type of hand gestures rather than just if they were used in the portrayal. It would also be interesting to have seen a comparison of children's emotion portrayals compared with the modeled video to identify how much of the model was used in the recreation.

In this dataset for physical coding of the emotion portrayal there were a number of things that were unreliable and could not be used during this analysis. These included how real the emotion was, if the coder was able to identify what condition (realistic vs. exaggerated) the child was in, two Laban Effort analyses (sustained and free), if the child used self-touch and if there was a still body part in the emotion creation. These data being unreliable stopped me from being able to have a better idea of more physical mechanisms used in these emotion portrayals than those used in analyses. Future research should aim to have specific definitions and examples of ratings for coders as these were not listed on the coding sheets. Coders were given a 1 to 7 Likert scale and asked to rate things such as how much of the child's body was used in the portrayal. A more specific coding sheet would likely increase the reliability between coders for these variables as they were highly reliable on other variables.

However, these categories being unreliable between coders gives more information on the children's emotional portrayals, specifically what is being deemed important by the children and used in their emotional portrayal. For instance, the coders were unable to agree on how real the emotion was being portrayed and unable to identify the condition the child was in. This says that there were inconsistencies in how a child was portraying the emotion on a realistic to exaggerated spectrum. However, the results of this study show that though they were inconsistent in realism of the portrayal, the target emotion was able to be accurately coded. Therefore, the amount of realism in the modeled emotion the child saw most likely did not affect their emotion portrayals.

With coding of self-touch and still body parts, this study could have looked even further at the mechanisms in which children use to recreate emotions. From the current study it is shown that there were no significant differences between emotion for amount of hand gesture use, but there were differences in the condition the child was in (e.g. realistic or exaggerated). Having reliability for self-touch and still body parts, I could have formed a more conclusive observation on how children are using different parts of their bodies to recreate false emotions when modeled and not modeled.

Likewise, only two out of the four Laban Effort analyses were reliable between coders. As these four aspects (direct/indirect, strong/weak, sustained/sudden, free/bound) are used to describe movement together, having reliability for sustained/sudden and free/bound as well would have allowed for a better idea of how Laban Effort as a whole is different based on these conditions.

Conclusions

With these conclusions about when body movements are used during emotional portrayals, we can make deductions about how children are learning to create emotions. As supported by this research, there are certain mechanisms that children are identifying in a model that are being used to create their own conscious emotion portrayal. From this study we see that when children are not mimicking a model, they use more overall body engagement in order to recreate hurt, sad, and tired emotions. Also observed was an increased use of hand gestures when children were in the exaggerated condition showing the increase in overall body engagement. ,

Non-significant differences for amount of accuracy depending on if the child was mimicking the modeled emotion or which condition they were in also gives information about children's false emotional portrayals. For children in the current study, coders were unable to identify emotions no better when mimicked or not mimicked, the same applies to if the portrayal was realistic or exaggerated. Therefore, these aspects of the emotion portrayal did not make a difference in the accuracy of the emotion portrayal as coders were highly reliable (α =.991) on correctly labeling the target emotion.

The purpose of this study was to identify differences in accuracy and the mechanisms used in false emotion portrayals. This study was unable to identify differences in accuracy for false emotion portrayal but was able to identify differences in body movement (e.g. hand gestures, total physical engagement, and Laban Effort analyses) in children's false emotion portrayals. These differences show that when children are observing an adult or peer's emotional display to learn how to portray emotions, they are focusing on the physical body movements in order to recreate those

emotions. Therefore, in emotional development it can be said that when children (at least ages 6-8) are asked to use display rules or create a false emotional display from models in the room, they are taking into account all physical movements of the model and applying them to their portrayal. The results of this study allow us to identify mechanisms children used to portray false and modeled emotions and therefore use this information when teaching emotions to younger children.

Tables

1.1 One- way ANOVA showing differences in Hurt emotion portrayals when mimicked versus not mimicked

Source	SS	Df	MS	*F*	*p*
Between Groups	.545	1	.545	2.545	.118
Within Groups	9.000	42	.214		
Total	9.545	43			

1.2 One- way ANOVA showing differences in Sad emotion portrayals when mimicked versus not mimicked

Source	SS	Df	MS	*F*	*p*
Between Groups	.006	1	.006	.003	.864
Within Groups	8.523	40	.213		
Total	8.53	41			

1.3 One- way ANOVA showing differences in Scared emotion portrayals when mimicked versus not mimicked

Source	SS	Df	MS	*F*	*p*
Between Groups	.37	1	.37	2.002	.165
Within Groups	7.03	38	.185		
Total	7.4	39			

1.4 One- way ANOVA showing differences in Tired emotion portrayals when mimicked versus not mimicked

Source	SS	Df	MS	*F*	*p*
Between Groups	.011	1	.011	.051	.822
Within Groups	8.794	40	.22		
Total	8.805	41			

2.1 One-way ANOVA showing differences in total physical engagement when mimicked versus not mimicked for Hurt emotion portrayal

Source	SS	Df	MS	*F*	*p*
Between Groups	3.719	1	3.719	6.257	.16
Within Groups	24.963	42	.0594		
Total	28.682	43			

2.2 One-way ANOVA showing differences in total physical engagement when mimicked versus not mimicked for Sad emotion portrayal

Source	SS	Df	MS	*F*	*p*
Between Groups	13.054	1	13.054	10.766	.002
Within Groups	49.714	41	1.213		

Total	62.767	42

2.3 One-way ANOVA showing differences in total physical engagement when mimicked versus not mimicked for Scared emotion portrayal

Source	SS	Df	MS	*F*	*p*
Between Groups	3.664	1	3.664	2.894	.096
Within Groups	51.908	41	1.266		
Total	55.572	42			

2.4 One-way ANOVA showing differences in total physical engagement when mimicked versus not mimicked for Tired emotion portrayal

Source	SS	Df	MS	*F*	*p*
Between Groups	7.035	1	7.035	6.267	.016
Within Groups	44.903	40	1.123		
Total	51.938	41			

3.Mixed ANOVA showing differences in accurate coding for emotion portrayals depending on emotion and condition type (e.g. acting versus pretend)

Source	SS	Df	Ms	*F*	*p*
Between Subjects	3.681	1	3.681	20.011	.000
Condition	0.05	1	0.05	0.27	0.606
Error	6.623	36	0.184		

Accuracy of Emotion	0.035	2.118	0.016	0.286		0.764
Error	4.398	76.262	0.058			
Emotion*Condition	0.15	2.118	0.071	1.226		0.301

4. Mixed ANOVA showing Differences in total physical engagement between different emotion portrayals.

Source	SS	Df	Ms	*F*	*p*
Between Subjects	486.451	1	486.451	926.221	0
Condition	2.482	1	2.482	4.726	0.036
Error	20.483	39	0.525		
TotalPhys	0.76	3	0.253	0.296	0.829
TotalPhys*Condition	2.653	3	0.884	1.032	0.381
Error	100.261	117	0.857		

5. Mixed ANOVA showing differences in the use of hand gesture during emotion portrayal for emotions created in the acting versus pretend condition.

Source	SS	Df	Ms	*F*	*p*
Between Subjects	470.078	1	470.087	589.483	0
Condition	3.854	1	3.854	4.833	0.034
Error	31.1	39	0.797		
Hand gesture	0.844	2.447	0.345	0.227	0.877

HandGesture*Condition	2.635	2.447	1.077	0.709	0.548
Error	144.882	95.414	1.518		

6.1 Mixed ANOVA showing differences in the use of Laban Effort Analysis – Direct for emotions portrayed in the acting versus pretend condition.

Source	SS	Df	Ms	*F*	*p*
Between Subjects	202.466	1	202.466	595.353	0
Condition	0.728	1	0.728	2.14	0.151
Error	13.263	39	0.34		
Laban Direct	0.877	3	0.292	0.563	0.64
LabanDirect*Condition	0.499	3	0.166	0.321	0.81
Error	60.718	117	0.519		

6.2 Mixed ANOVA showing differences in the use of Laban Effort Analysis – Strong for emotions portrayed in the acting versus pretend condition.

Source	SS	Df	Ms	*F*	*p*
Between Subjects	252.992	1	252.992	691.646	0
Condition	1.415	1	1.415	3.869	0.056
Error	14.266	39	0.366		
Laban Strong	0.893	3	0.298	0.61	0.61

LabanStrong*Condition	1.271	3	0.424	0.868	0.46
Error	57.113	117	0.488		

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