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Expressing positive emotions as they are:

Spontaneous Production, Display Rules, and the Role of Culture

Expressing how we feel is an essential part of our lives. We frown when angry with a colleague (Geddes et al., 2020), tear up when upset with the loss of a loved one (Gračanin et al., 2018), and scrounge our noses in disgust when observing people engaging in immoral behaviors (Heerdink et al., 2019). Thankfully, our emotion displays are not confined to feeling negative; when we feel good, we also tend to express ourselves in a variety of ways. We partake in gift giving to demonstrate we are thankful (Wang et al., 2015), clench our fists in triumph when victorious (Hwang et al., 2016), and signal our shared interests by nodding our heads when in conversation with likeminded people (Silvia, 2008). While psychologists have systematically unpacked how specific negative emotions are expressed (e.g., robust lines of work for the so-called basic emotions of anger, fear, disgust, and sadness: see Keltner et al., 2019) by applying a variety of approaches (e.g., posed displays: Cordaro et al., 2020; spontaneous expressions: Cowen & Keltner, 2020, self-report: Mesquita, 2001), much less is known about positive emotional expressions. Given that pleasant feelings comprise a significant portion of our emotional lives, it is pertinent to better understand how positive emotions are expressed, and relatedly, how context and culture play into these expressions. Doing so would expand our theoretical understanding of what scholars have termed the positive emotion space (for a call to arms, see Shiota et al., 2017), and simultaneously provide the bedrock for applied insights into the consequences of feeling good (for elaboration, see Keltner & Cowen, 2021).

In this dissertation, we aimed to answer three research questions (RQs) relating to the expressions of positive emotions. We first sought to examine how specific positive emotions are spontaneously expressed, in other words: when expressed in an unrestrained manner, what do different positive emotions (e.g., relief, elevation, amusement) look like on the face

(RQ1)? Next, we evaluated the role of emotion specificity in shaping expression norms for positive emotions: are there rules for ‘feel good’ emotions, and if so, are there consequences for breaking these rules (RQ2)? Finally, we reviewed the role of culture in influencing positive emotional expressions: to what degree does culture influence the expressions of specific positive emotions (RQ3)?

The opening chapter of this thesis is intended to act as a roadmap to the questions we seek to answer. We start by presenting our working definition of a positive emotion, and relatedly point to existing taxonomies that describe the positive emotion space. We next elaborate on the rationale for each of our RQs, and in so doing summarize the existing literatures relating to emotional expressions (RQ1), emotion display rules (RQ2), and the cultural psychology of emotional experience and expressions (RQ3). We end by providing an overview of the subsequent chapters in this thesis, that are informed by both empirical (Chapters 2-4) and theoretical (Chapter 5) work.

Defining and describing the positive emotion space

Although there exist a variety of theoretical perspectives on what constitutes an emotion (elaborated further in Chapter 5), most scholars would agree that human beings experience states that we come to conceptualize as emotions (Scarantino, 2012). Key features of an emotion include it being a state directed at an object that often lasts for a brief period of time, which is what distinguishes it from a mood (Beedie et al., 2005). It is elicited by a stimulus or event that could be social (e.g., a smiling face in the crowd: Rychlowska et al., 2017) or physical (e.g., the Grand Canyon: Monroy & Ketlner, 2022) or imaginary (thinking about or recalling an amusing event: Warren et al., 2021). An emotion may involve any number of a variety of components, such as appraisals (e.g., Scherer & Moors, 2019), action tendencies (e.g., Frijda, 1987), subjective experience (e.g., Mesquita & Boiger, 2014), physiological changes (e.g., heartrate fluctuations: Lane et al., 2009). The emotion

component that is the focus on this thesis is nonverbal expressions (e.g., facial muscle movement: Rosenberg & Ekman, 2020).

We chose to define positive emotions as states that are felt to be pleasant. Experienced valence is noted to be a central dimension that has traditionally guided researchers in classifying emotional phenomena, and we took a similar approach in this thesis (for other ways to define a positive emotion, see Shiota et al., 2021). Psychological scientists have in recent years advanced our understanding of several specific positive emotions (Keltner & Cowen, 2021). Although early empirical studies of emotion focused mainly on negative states and the experience of joy in general (Fredrickson, 2001), there is an emerging awareness that people can feel a variety of emotions that make them feel good: awe (Keltner & Haidt, 2003), gratitude (McCullough et al., 2001), interest (Silvia, 2008), and pride (Tracy & Robins, 2004), to name a few. There is now a growing body of empirical work on how specific positive emotions are subjectively experienced (Kitayama et al., 2006), identified when expressed (Campos et al., 2015), and relate to a variety of intrapersonal (e.g., life satisfaction: Kuppens et al., 2008), interpersonal (e.g., social sharing: Rimé, 2009), and intergroup (e.g., reconciliation: Cohen-Chen et al., 2017) outcomes. Taking advantage of methodological advancements, scientists have applied sophisticated approaches to both measure (e.g., live recordings of emotional experience when engaging in activities: Napa Scollon et al., 2005) and taxonomize (e.g., web scrapped data from social media: Cowen & Keltner, 2020) multiple positive emotions.

By drawing together these scattered lines of work, affective scientists have attempted to organize and chart out ways in which the positive emotion space can be adequately represented. For this thesis, we draw on two existing theoretical frameworks. Each of these frameworks stem from a different research tradition: the emotion families approach (Sauter, 2017) is based on evolutionary functions shared across human beings (Tooby & Cosmides,

2008), while the arousal-engagement framework emphasizes cross-cultural differences (Boiger & Mesquita, 2012), positing that emotions can be classified according to underlying dimensions.

The emotion families approach (Sauter, 2017; Shiota et al., 2017) suggests that positive emotions can tentatively be classified into one of four clusters that differ in their evolutionary functions. *Epistemological* emotions involve a shift in one's knowledge state (e.g., interest), *prosocial* emotions aid in fostering social relationships (e.g., gratitude), *savoring* emotions stem from experiencing pleasant stimuli (e.g., sensory pleasure), and *agency-approach* emotions are characterized by a desire to obtain possible rewards in the environment (e.g., triumph).

The arousal-engagement matrix combines the two distinct, but complementary dimensions of physiological arousal (Tsai et al., 2006) and social engagement (Kitayama, et al., 2006). *Arousal* denotes the degree to which an emotion elicits a heightened physiological response (Larsen et al., 1986), and *Engagement* refers to the extent to which an emotion facilitates interpersonal closeness between people (Kitayama et al., 2000). Positive emotions could hence theoretically fit into one of four potential quadrants: high arousal and engagement (e.g., sexual desire), high arousal but low engagement (e.g., sensory pleasure), low arousal and engagement (e.g., determination), and low arousal but high engagement (e.g., gratitude).

Although inspired by divergent lines of work, these taxonomies are not mutually exclusive, because they each focus on different elements and functions. For example, gratitude can be classified as prosocial, yet also be categorised as low in terms of arousal and high on engagement (Eibach et al., 2015). In contrast, sensory pleasure is thought to be savouring, and simultaneously seen as high arousal albeit low on engagement (Oishi et al., 2001). To be inclusive of the varied research traditions represented in affective science, both

frameworks will be considered in this thesis for adequate coverage of the positive emotion space, when selecting specific positive emotions for empirical inquiry.

Communicating positive emotions, spontaneously

There is growing acknowledgement in affective science that a broad range of positive emotions are communicated with distinguishable nonverbal behaviors (Keltner & Cordaro, 2017). These inferences are drawn mostly based on empirical research regarding the perception of positive emotions, that is, whether people are able to accurately identify what specific positive emotions may look like, based on particular expressive cues (Cordaro et al., 2020). These behaviors include facial expressions (e.g., different types of smiles: Rychlowska et al., 2017), postural cues (e.g., inferring pride from a straightened back: Tracy & Robins, 2004), and vocalizations (e.g., amusement from multiple amplitude onsets: Sauter et al., 2010). While initial studies used categorical judgment tasks (e.g., where participants were only provided with a limited set of response options: Ekman, 1992) of posed expressive displays (e.g., that could reflect cultural tropes: Russell, 1994), recent advances include the use of free labelling (Cowen & Keltner, 2017), with expressions that are obtained from real world situations (Cowen & Keltner, 2020).

However, the communication of positive emotions goes beyond perception alone. An essential prerequisite to understand this phenomenon involves studying the production of emotional expressions, that is, which behaviours are involved when someone expresses a given emotion. In fact, the earliest (Darwin, 1872) and most established (Ekman, 1994) theoretical foundations of emotional expressions are based on theorizing about how people produce emotions, yet empirical inferences have mainly been drawn from perceptual judgment tasks. Given that an emotional expression could include behaviors that may not have been selected for in evolutionary terms to communicate information (signs versus signals: Goffman, 1959; Fridlund, 1994), it would be unwise to assume a direct mapping

between one angle of inquiry (e.g., expression of an emotion) and another (e.g., its accurate identification by others). Relying purely on perception-based findings could mean that researchers may have an incomplete understanding of how an emotion is truly expressed, and some of these missed behaviors may serve key intrapersonal functions (e.g., Sauter et al., 2010), which makes examining emotion production critical (for further elaboration, see Sauter & Russell, 2020). Yet there is considerably less work on the production of specific positive emotions, arguably due to pragmatic concerns (e.g., such experiments are resource intensive to conduct).

Thus far, production studies have examined how positive emotions are expressed using a range of modalities, from vocalizations (e.g., sighing when relieved: Vlemincx et al., 2009) to postural cues (e.g., raised arms for triumph: Matsumoto & Hwang, 2012). Much of this work has focused on facial expressions (e.g., smiling for elation: Cordaro et al., 2018, raised eyebrows for awe: Shiota et al., 2003), and rightfully so given the importance of the face in communicating that someone feels good (see Mortillaro et al., 2011). A major caveat to the scientific discourse on how positive emotions are expressed relates to the use of posed production paradigms (Sauter & Fischer, 2018). Showing others that we feel good often occurs spontaneously in our everyday lives, yet almost all the work conducted in this field uses expressions by getting people to pose how they would typically display a positive emotion (Cordaro et al., 2018). These stimuli raise concerns about ecological validity and limit our understanding of how positive emotions may be actually expressed as people experience them (for elaboration, see Kollareth et al., 2021). Even while a handful of papers have attempted to study spontaneous production of emotional expressions, such work is either confined to vocalizations (arguably due to methodological clarity in the extraction of acoustic features: see Kamiloglu et al., 2020) or relates to specific positive emotions that are studied in isolation (e.g., pride: Tracy & Robins, 2007). Whether multiple positive emotions

have particular facial behaviors associated with them when produced freely remains an open question; it is a worthwhile endeavor for analysis if we are to draw generalizable conclusions about how people express themselves when they feel good in different ways.

In **Chapter 2**, we aimed to answer RQ1: when expressed in an unrestrained manner, what do multiple positive emotions look like on the face? To do so, we elicited 22 positive emotions in a spontaneous manner via the participant negotiated recall method (Jing et al., 2019), where people ($n = 163$) freely narrate their life experiences relating to each of those emotions. Their facial expressions were recorded and taxonomized with well-established tools (Facial Action Coding System: Rosenberg & Ekman, 2020), and we thereafter applied two types of analyses to the extracted facial behaviors (valid datapoints = 67, 298): frequency analyses to test our pre-registered hypotheses, and network models that provided us with indices of specificity. Even when expressed spontaneously, consistent patterns of facial expressions were surfaced for 16 positive emotions. Some were highly complex and involved multiple facial actions (e.g., when amused or triumphant), while others were simpler (e.g., when hopeful or interested). Chapter 2 hence provides a tentative map of what specific positive emotions may look like when spontaneously shown on the face.

Norms for expressing positive emotions

The literature on emotion norms operates from a key premise: that people do not always show others how they feel (Ekman & Friesen, 1969). While individual differences (Gross & John, 2003), as well as environmental cues (Greenaway et al., 2018), can influence whether or not an emotion is expressed, one key explanation for differences in emotional expressions is display rules: social norms about how appropriate the expression of a specific emotion is in a given culture and context (Ekman, 1992; Hochschild, 1979; Saarni, 1979). A substantial body of work has investigated display rules for negative emotions, such as sadness and anger (Halberstadt et al., 2013; Christoforou & Ashworth, 2015). Apart from the displays

of triumph (see Kalokerinos et al., 2014), joy (see Matsumoto et al., 2008) and amusement (Giuliani et al., 2008), much less is known about expressivity norms for specific positive emotions that are highly meaningful in our everyday lives, such as gratitude (Gulliford et al., 2013), interest (Dukes et al., 2017), or sensory pleasure (Oishi et al., 2001).

A central finding in the affective norms literature relates to how expressions of joy are generally considered acceptable when contrasted against the display of negative emotions (Matsumoto et al., 2005). The result that joyful expressions are the most permissible amongst the emotions typically studied is highly consistent across cultures (Matsumoto et al., 2008), when examining workplace norms (Diefendorff & Greguras, 2009), and in the case of children's emotion displays as well (Zeman & Garber, 1996). However, emergent evidence suggests that even for positive emotions, displays may be discouraged in particular contexts: expressing *schadenfreude* by laughing at the misfortune of others (Smith et al., 2009), openly showing triumph when a defeated opponent is watching (van Osch et al., 2019) or sharing jokes during somber situations (Kastendieck et al., 2021). This disjuncture highlights that expressivity norms should in theory differ even between multiple positive emotions, but there remains a paucity in empirical work directly comparing between specific positive emotions.

A potential explanation for these contrasting findings may pertain to the social signaling value of emotional expressions. Emotion displays signal communicative information to observers (emotions as social information: Van Kleef, 2009): a genuine smile may suggest an intention to cooperate (Martin et al., 2017), tears may indicate that the expresser requires help (Gračanin et al., 2018), and a frown could be viewed as a sign of hostility (Tipples et al., 2002). Hence while joyful expressions are probably encouraged due to their associated behavioral signals (e.g., smiling), especially in comparison to frowns of anger (Hess et al., 2005), the expansive and full body related display of triumph may instead be perceived as domineering (Hwang & Matsumoto, 2014). Such is the importance of

signaling effects that in some contexts, restrained expressions of happiness can lead to ramifications (e.g., for customer service staff, not smiling enough predicts reduced client satisfaction: Grandey & Sayre, 2019). In contrast, for triumph, open displays instead predicate negative consequences (e.g., grinning when winning may predict reduced social contact: Kalokerinos et al., 2014). At present, our understanding of affective norms for pleasant states is informed by scattered lines of work and remains incomplete as other key emotions have yet to be examined (e.g., gratitude, feeling moved). The literature would benefit from attempts to integrate and expand upon past findings.

In **Chapters 3 and 4**, we sought to answer RQ2: are there rules for specific positive emotions, and if so, are there consequences for breaking these rules? We first empirically test the hypothesis that display rules differ between multiple positive emotions (**Chapter 3**). We did so in four studies with participants from five countries ($n = 1,181$), and our data point to consistent cross-emotion differences in display rules. Weaker display rules were found for *gratitude*, *interest*, and *amusement*, while stronger display rules were found for *sensory pleasure*, *feeling moved*, and to some degree *triumph*. We demonstrate that some positive emotions are less acceptable to express than others, and tentatively suggest that the social signaling value of an emotional expression may be a potential explanation for why. In so doing, Chapter 3 provides the first map of expression norms for specific positive emotions and introduces a psychometrically valid measure of display rules that was purpose-built for positive emotions.

Building upon these results, we next evaluated the social consequences that are faced by people who break expressivity rules for specific positive emotions (**Chapter 4**). We hypothesize that transgressions would be judged differently in accordance with the social information that may be communicated by specific positive emotions. In two experiments involving four positive emotions ($n = 901$), we demonstrate that that even for pleasant

feelings, showing too much – or too little – can lead to negative social consequences.

Expressers who downplay their affiliative gestures (*gratitude*, and to a lesser degree *interest*) are deprived of social contact and power. Restrained displays of *feeling moved* are also met with reduced contact. However, for *triumph*, amplified expressers are socially avoided (possibly seen as conceited), yet at the same time, those who downplay their victory are seen to be less powerful. To capture the signals that may be sent by each emotional expression, we explored the role of person-perception mechanisms (warmth and competence) as underlying explanators for why norm violators were judged. Taken together, Chapters 3 and 4 advance our understanding of how and why affective norms apply for emotions that make people feel good.

Culture and (expressing positive) emotions

The extent to which culture influences emotion is a hotly contested topic in psychological science (Lindquist et al., 2013; Lench et al., 2013), and two schools of thought predominantly contribute to the debate. The basic emotions approach argues that emotions are specialised evolved adaptations (Tooby & Cosmides, 2008), such that all humans are posited to have biologically based, innate latent affect programs (Levenson, 2011). In this approach, culture is viewed as an added layer of complexity, where emotion is further shaped by social learning (Ekman & Cordaro, 2011). In contrast, psychological constructionism considers cultural learning as central for acquiring and experiencing emotions (Russell, 2017), such that emotions are made sense of by individuals in specific situations (Mesquita et al., 2017). Yet even in the strongest versions of constructionism, the process by which mental representations are formed in peoples' minds (e.g., through core affect and conceptualisation) are thought to be innate (see Barrett, 2014). It is hence worth noting that both theories point to some innate features and some learning processes, although they differ in the degrees to

which each postulates emotion to be shaped by culture, in addition to diverging opinions on what is thought to be biologically given.

Rich lines of empirical inquiry have been inspired by both theoretical perspectives. For subjective experience, researchers point to considerable differences in what people across the world report feeling (Mesquita, 2001; Fischer et al., 2004), even for positive emotions. For example, in collectivistic cultures like Japan, other-focused positive emotions (e.g., gratitude) are experienced as more pleasant and intense as compared to self-focused positive emotions (e.g., pride), and an opposite pattern was instead found in individualistic cultures such as the U.S. (Kitayama et al., 2006). Cultural differences emerge for prospective reports of positive emotions as well: low arousal feel good states such as calmness are more favoured in eastern rather than western societies (Tsai, 2007). Taking the field further, scientists have since used momentary reporting techniques (e.g., experience sampling methods: Napa Scollon et al., 2005), and find meaningful cultural differences in emotional experience relating to applied domains as well (e.g., romantic relationships: Boiger et al., 2020, child rearing: Trommsdorff & Kornadt, 2003). Culture is hence viewed as a key facet that influences positive emotional experiences.

However, for perceiving emotional expressions, evidence instead points towards greater cross-cultural consistencies, even for specific positive emotions: for example, expressions of pride, characterised by a straightened back and pursed-lip smile, have been found to be reliably identified across multiple cultural groups (Tracy & Robins, 2008). Scientists have since applied machine learning techniques to large datasets extracted from naturalistic expressions of emotion, and cross-cultural stabilities have been surfaced in classifying emotion vocalisations (Cowen et al., 2019), and facial-bodily expressions (Cordaro et al., 2020). These cross-cultural similarities in emotion perception relate to positive emotions as well (e.g., awe, desire, amusement). Taken together, evidence regarding

emotional experience and perceiving emotional expressions point to divergent conclusions regarding the role of culture. How should these differences be understood, and can they be potentially reconciled? Attempting to do so would potentially provide a solid theoretical base through which scientists can test empirical questions and allow for sharper hypothesising moving forward in the domain of the universality of emotion.

In **Chapters 5 and 6**, we sought to answer RQ3: to what degree does culture influence the expressions of discrete positive emotions? We start by introducing a theoretical framework to help understand the degree to which culture influences emotion (**Chapter 5**). To this end, we drew together representative sets of findings regarding the role of culture in emotional experience (e.g., Mesquita, 2001), the production of emotional expressions (e.g., Cordaro et al., 2018), and their perceptions (e.g., Masuda et al., 2008). We thereafter examined the available evidence through a novel theoretical lens: by merging the hierarchical framework of cultural universals (Norenzayan & Heine, 2005) with the multi-componential approach to emotions (Levenson et al., 2007). In so doing, we postulate that question of whether emotions are universal or not must consider different components of emotions separately, and should recognise the possibility that the answers may not be consistent across components. With regards to positive emotional expressions, Chapter 5 argues for functional universality: while culture-specific patterns of expression have been found for some emotions, these often co-occur with consistencies that are observed across groups, hence pointing to quantitative rather than qualitative distinctions between cultures.

Building upon our theorizing, we empirically test the hypothesis that specific positive emotions would be reported to be expressed in a consistent manner across multiple cultures (**Chapter 6**), and we do so by adapting an established tool from cultural psychology (intersubjective approach: Chiu et al., 2010). we systematically examined which channels are thought to be used for expressing four specific positive emotions: feeling moved, gratitude,

interest, and triumph. We first explored how the four positive emotions were reported to be expressed in two North American community samples (Studies 1a & 1b: $n = 1466$), and next confirmed the cross-cultural generalizability of our findings by surveying respondents from ten countries that differed on cultural values (Study 2: $n = 1826$). Our findings point to cross-culturally consistent results of differential expressions across positive emotions. Feeling moved was thought to be signaled with facial expressions, gratitude with the use of words, interest with words, face, and voice, and triumph with body posture, vocal cues, facial expressions, and words. When viewed in parallel, Chapters 5 and 6 build a case for how the expression of positive emotions may consist of cross-culturally consistent patterns, in addition to some meaningful cultural specificities.

Aims and Roadmap

To recap, the overarching goal of this dissertation is to expand our scientific understanding of positive emotional expressions. We do so by attempting to answer three key questions, that are elaborated upon in five chapters that build atop each other.

In Chapter 2, we address a disjuncture in the affective science literature regarding the expression of positive emotions. While expressing that we feel good is a spontaneous part of our everyday lives, most empirical research on positive emotional expressions is instead informed by posed displays. We hence drew together and tested how 22 positive emotions are spontaneously expressed on the face. Our findings point to consistent and specific patterns of facial expressions for at least 16 positive emotions.

In Chapter 3, we examine the question of whether all states that feel pleasant can always be shown to everyone. We hence mapped out context-specific display rules for eight positive emotions, and alongside developed a new measure of expressivity norms that is well suited to reflect the multimodal nature of positive emotional expressions. Our findings demonstrate that display rules differ between positive emotions and social contexts.

In Chapter 4, we empirically test the consequences faced by expressivity norm violators. We demonstrate the ramifications of over or under expressing four positive emotions that differ in their communicative functions, and additionally explore the person-perception mechanisms that could explain why expressive norm violators are judged. Chapter 4 hence establishes that there are optimal levels of showing that one feels good, and further describes what happens to expressers when they deviate from others' expectations.

Chapter 5 starts by reviewing the existing literature on emotional experience and expressions, and in so doing applies two established frameworks from affective science (componential perspective of emotion) and cultural psychology (hierarchy of universals) to make sense of contradicting findings. Based on the available evidence, we postulate that positive emotional expressions may be functional universals: culture-specific patterns co-occur with consistencies that are observed across groups.

In Chapter 6, we empirically evaluate how positive emotions are reported to be expressed across multiple cultures. By employing an established method from cross-cultural psychology (intersubjective approach), we demonstrate that for the expression of four specific positive emotions, culture-specific patterns were built atop consistencies across groups, at least the level of granularity relating to modalities.

The above-described chapters systematically seek to advance scientific discourse relating to the expression of positive emotions. By drawing together our findings, the final chapter of this thesis (**Chapter 7: General Discussion**) will point to the implications of our work, as well as suggest future directions that could capitalize on the strengths and weaknesses of the approaches we have taken.