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Racial and Ethnic Differences in Emotion Regulation: A Systematic Review

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Abstract

Objective: Emotion regulation is a transdiagnostic mechanism with relevance to the etiology, maintenance, and treatment of a wide range of clinically relevant outcomes. The current study applied systematic review methods to summarize the existing literature examining racial and ethnic differences in emotion regulation.

Methods: We systematically searched four electronic databases (PsycINFO, Embase, MEDLINE, CINAHL Plus) using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

Results: Of the initial 1,253 articles, 25 met the inclusion criteria. Findings for emotion regulation strategies generally provide evidence for racial/ethnic differences (71% of reviewed studies), with ethnoracial minorities largely exhibiting greater use of emotion regulation strategies. Whereas the results for emotion regulation potential were slightly more mixed (63% of reviewed studies found racial/ethnic differences), ethnoracial minorities were also largely found to report lower emotion regulation potential.

Conclusion: This review advances literature by providing additional support for racial and ethnic differences in emotion regulation.

Keywords

Emotion Regulation; Emotion Dysregulation; Expressive Suppression; Cognitive Reappraisal; Racial Differences; Ethnic Differences; Systematic Review

Emotion regulation is one of the fastest growing areas in psychological research (Tull & Aldao, 2015b). Empirical investigations over the past two decades highlight the transdiagnostic nature of emotion regulation (Cludius et al., 2020). Across these studies, emotion regulation has emerged as a key mechanism underlying the etiology, maintenance, and exacerbation of a wide array of clinically relevant outcomes (for reviews, see Aldao et al., 2010; Gratz & Tull, 2010a; Hu et al., 2014; Weiss, Sullivan, et al., 2015), including posttraumatic stress disorder (Tull et al., 2007; Weiss et al., 2013), depression (Dixon-

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Gordon et al., 2015; Tull & Gratz, 2008), anxiety (Roemer et al., 2009; Vujanovic et al., 2008), borderline personality disorder (Gratz et al., 2006; Gratz et al., 2008), substance use disorder (Fox et al., 2007; Fox et al., 2008), disordered eating (Lavender & Anderson, 2010; Lavender et al., 2014), nonsuicidal self-injury (Gratz & Chapman, 2007; Gratz & Tull, 2010b), HIV/sexual risk (Messman-Moore et al., 2010; Tull et al., 2012), and aggression (Gratz et al., 2009; Shorey et al., 2011). Moreover, results stemming from early clinical research studies highlight the utility of targeting emotion regulation as a target, outcome, and mechanism of psychological treatments (for a review, see Gratz et al., 2015). Collectively, this literature underscores the clinical significance of research on emotion regulation.

A key limitation of past studies on emotion regulation, however, is that the vast majority have been conducted in the United States among samples of predominantly white individuals. Of importance, existing literature suggests the potential for racial and ethnic differences in emotion regulation. For instance, worldviews, ideologies, values, and concepts of the self vary across racial and ethnic groups and may influence how members of these groups evaluate or appraise emotional stimuli (Markus & Kitayama, 1991, 1998; Matsumoto, 2006; Schwartz & Bardi, 2001). Individuals from different racial and ethnic groups may diverge in their criteria for assessing event desirability, including their experience of specific emotions, related to culturally sanctioned rules and norms and related social reactions (Markus & Kitayama, 1991; Roseman et al., 1995). Relatedly, tied to important aspects of cultural identity (e.g., individualistic versus collectivistic orientation) is the perception that emotional experiences are (un)controllable and (un)predictable, and thus these may differ as a function of race and ethnicity (De Leersnyder et al., 2013). Individuals from different racial and ethnic groups may also vary in how they modulate emotions. Emotions communicate important information to others (Keltner & Haidt, 1999)—divergent expectations for social behavior across racial and ethnic groups produce different guidelines for the regulation of emotional expression (Matsumoto, 1993). Indeed, one's racial and ethnic social context provides valuable cues that are referenced when regulating emotions as well as differentially encourages and reinforces emotional responding, resulting in divergent conditions under which emotional responses are sanctioned (Butler et al., 2007). For example, racial and ethnic groups that are characterized by a collectivistic orientation prioritize in-group over individual goals, necessitating members modify their emotional experiences to meet the needs of the group (Hofstede, 2001). Specifically, cultural ideologies of conformity, obedience, and in-group cohesion among racial and ethnic groups that value collectivism produce standards for individuals to down-regulate emotional expressions that threaten in-group harmony and to encourage expression of emotions that maintain or create harmony. Despite evidence that racial and ethnic groups reference divergent ideological belief systems for guidelines on how to evaluate and modulate emotionally salient cues in their environments, racial and ethnic group differences are often overlooked in research on emotion regulation.

Notably, numerous definitions for emotion regulation have been set forth in the extant research (Tull & Aldao, 2015a), and research examining racial and ethnic differences in emotion regulation has utilized these diverse conceptualizations. Tull and Aldao (2015a) distinguished between emotion regulation potential and strategies. Emotion regulation *potential* refers to the typical or dispositional ways in which individuals understand, regard,

and respond to their emotional experiences (see Gratz & Roemer, 2004; Thompson, 1994; Weiss et al., 2015). Existing models of emotion regulation potential are multi-faceted and emphasize ones' awareness, understanding, and acceptance of emotions; ability to control behaviors when experiencing emotional distress; access to emotion regulation strategies that are perceived as effective and flexibly applied to modulate the duration and/or intensity of aversive emotional experiences; and willingness to experience emotional distress as part of pursing meaningful activities in life. Conversely, consistent with the extended process model of emotion regulation (Gross, 2015), emotion regulation may be defined by the type and timing of particular *strategies* at different points in the emotion-generative process. These models of emotion regulation focus on the specific strategies used by individuals to influence the experience and expression of emotions (see Cole et al., 1994; Koole, 2009). Broadly speaking, these strategies can function in either adaptive or maladaptive ways (Gross, 2015), with putatively adaptive strategies (e.g., cognitive reappraisal) related to enhanced psychological well-being and putatively maladaptive strategies (e.g., expressive suppression) showing robust relations with psychological disorders (Aldao et al., 2010). Potential and strategy models of emotion regulation capture unique and significant aspects of the larger construct of emotion regulation, and thus their dual examination provides useful and comprehensive data on emotion regulation across racial and ethnic groups.

While empirical investigations of racial and ethnic differences in emotion regulation are relatively scant, early research findings in this area provide support for divergent patterns of emotion regulation strategies across different racial and ethnic groups. For instance, Asian, Black, and Hispanic individuals have been shown to report more expressive suppression – or attempts to inhibit an emotional response – compared to white individuals (Gross & John, 2003; Gross et al., 2006). Conversely, mixed findings have been found for cognitive reapprisal – or re-evaluating the meaning of a given situation to reduce its emotional impact – among racial and ethnic groups, with one study finding that Asian vs. American individuals exhibited greater beliefs that emotions are changeable (Qu & Telzer, 2017) and others finding no significant racial and ethnic differences in the use of this emotion regulation strategy (Gross & John, 2003; Tsai et al., 2002; Tsai et al., 2006). Soto et al. (2011) proposed that emotional expression may draw unwanted attention to individuals that value collectivism – which varies across racial and ethnic groups (Green et al., 2005), disrupting group harmony/cohesion. In turn, these individuals may be more likley to utilize more emotion regulation strategies (both putatively adaptive and maldaptive) to modulate their emotional experiences. Evidence also suggests racial and ethnic differences in emotion regulation potential. Specifically, non-white (vs. white) and Hispanic (vs. non-Hispanic) individuals exhibit less acceptance of emotions and greater behavioral dyscontrol (e.g., impulsivity) in the context of emotional stimuli (Weiss et al., 2019). Intense emotions may increase risk for disrupting cultural ideologies of conformity, obedience, and in-group harmony (Hofstede, 2001), eliciting negative evaluations and impulsive responding amongst racial and ethnic groups that promote these values. Together, these findings suggest potential racial and ethnic differences in emotion regulation strategies and potential.

To advance culturally-informed research on emotion regulation, we systematically reviewed and synthesized prior investigations examining racial and ethnic differences in emotion regulation strategies and potential. This systematic review is a critical next step in the

existing literature given the application of various definitions of emotion regulation and evidence for mixed findings in past studies of racial and ethnic differences in emotion regulation. Findings of this review will further clarify the nature of emotion regulation across racial and ethnic groups.

Methods

Search Strategy

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Moher et al., 2009). The following databases were searched on June 25, 2020: PsycINFO, Embase, MEDLINE, and CINAHL Plus. Search terms included “emotion regulation” OR “emotional regulation” OR “emotion* dysregulation” OR “emotional dysregulation” OR “emotion* dysfunction” “affect* regulation” OR “affective regulation” OR “affect* dysregulation” OR “affective dysregulation” OR “affect dysfunction” OR “affective dysfunction” OR “difficult* regulat*” AND “racial difference*” OR “ethnic* difference*” OR “racial/ethnic difference*” OR “race” OR “racial” OR “ethnic” OR “ethnicity”. All papers generated using these search criteria were compiled by one author into an Endnote database, and duplicate articles were removed. Abstracts were screened by two independent undergraduate student reviewers from the initial search to assess inclusion criteria. Discrepancies in coding were reviewed by a third doctoral student independent reviewer; final inclusionary determinations were made. The search strategy is illustrated in Figure 1.

Article Selection Criteria

Articles were selected for this systematic review based on four pre-determined criteria: 1) reporting in English language, 2) empirical study, 3) paper reported on racial or ethnic differences in emotion regulation, and (4) sample comprised adults aged 18 and over.

Data Extraction and Synthesis

The remaining full-length articles were reviewed and information relevant to study goals was then extracted and compiled into tables (see Tables 1 and 2). Information was pulled from each article regarding: 1) sample demographics (age, sex), 2) study characteristics (sample size, recruitment setting, location), 3) type of emotion regulation (strategy vs. potential model), 4) racial/ethnic group(s) of focus, 5) measure used to assess emotion regulation, 6) study design and analytic strategy, and 7) findings on racial/ethnic differences in emotion regulation.

Results

Search Results

The search strategy yielded 1,253 articles. After removing duplicates, the search resulted in 705 articles. After the initial title and abstract review, 621 were excluded. Following the procedures outlined above, the remaining 84 full-text articles were reviewed. Of those, 59 were excluded (see Figure 1 for reasons for exclusions). Thus, the final 25 were subsequently examined, and relevant information pertaining to study goals was extracted.

Sample Demographics and Study Characteristics

Sample demographics and study characteristics are summarized in Table 1. The 25 included studies represented 37,055 participants, 62.3% of whom were female.[1] Sample sizes ranged from 29 (Qu & Telzer, 2017) to 22,563 (Fancourt et al., 2020), and the mean ages of participants ranged from 18.94 (Perez & Soto, 2011) to 60.8 (Consedine et al., 2012), while four studies did not report mean age (Brownlow et al., 2018; Gross et al., 2006; Harel & Finzi-Dottan, 2018; Lü & Wang, 2012). Regarding sex, seven articles (28.0%) had an all-female sample, and no articles had an all-male sample. The most common recruitment setting was within universities (n = 14, 56.0%; Berzenski & Yates, 2010; Brownlow et al., 2018; Butler et al., 2007; Gross & John, 2003; Gross et al., 2006; Haliczer et al., 2019; Kalibatseva, 2015; Kalibatseva & Leong, 2018; Lü & Wang, 2012; Melka et al., 2011; Morelen et al., 2013; Perez & Soto, 2011; Qu & Telzer, 2017; Su et al., 2015), followed by community samples (n = 7, 28.0%; Arens et al., 2013; Caplan, 1992; Consedine et al., 2014; Consedine et al., 2005; Consedine et al., 2012; Fancourt et al., 2020; Haliczer et al., 2019) and medical offices/facilities (n = 3, 12.0%; Kaplan, 2004; Newhill et al., 2009; O'Neill & Rudenstine, 2019). One study each used data collected from MTurk (Schick et al., 2020), Centerdata (Stupar et al., 2015), and a Welfare Department (Harel & Finzi-Dottan, 2018). The majority of the studies took place in the United States (n = 20, 80.0%). Other study locations included Puerto Rico (Perez & Soto, 2011), China (Lü & Wang, 2012), Germany (Arens et al., 2013), Israel (Harel & Finzi-Dottan, 2018), the Netherlands (Stupar et al., 2015), Canada (Haliczer et al., 2019), and the United Kingdom (Fancourt et al., 2020). Two studies took place in two countries and reported results separately for each country (U.S. and Canada and U.S. and Puerto Rico; Haliczer et al., 2019; Perez & Soto, 2011).

Methodological Variations

Almost all studies included white/European origin participants (n = 21, 84.0%; Arens et al., 2013; Berzenski & Yates, 2010; Brownlow et al., 2018; Butler et al., 2007; Caplan, 1992; Consedine et al., 2014; Consedine et al., 2005; Consedine et al., 2012; Fancourt et al., 2020; Gross & John, 2003; Gross et al., 2006; Haliczer et al., 2019; Harel & Finzi-Dottan, 2018; Kalibatseva, 2015; Kalibatseva & Leong, 2018; Melka et al., 2011; Morelen et al., 2013; Newhill et al., 2009; O'Neill & Rudenstine, 2019; Schick et al., 2020; Stupar et al., 2015). One of these studies specifically compared between groups of European origin (Turkish & German; Arens et al., 2013). One study compared individuals who were Jewish and Arabic (Harel & Finzi-Dottan, 2018), and one study compared Dutch majority individuals, individuals who had immigrated to the Netherlands from Western counties, and individuals who had immigrated from non-Western countries (Stupar et al., 2015). More than half of reviewed studies included Black/African origin participants (n = 16, 64.0%; Berzenski & Yates, 2010; Brownlow et al., 2018; Butler et al., 2007; Consedine et al., 2014; Consedine et al., 2005; Consedine et al., 2012; Fancourt et al., 2020; Gross & John, 2003; Gross et al., 2006; Haliczer et al., 2019; Kaplan, 2004; Melka et al., 2011; Morelen et al., 2013; Newhill et al., 2009; O'Neill & Rudenstine, 2019; Schick et al., 2020). Of these, three studies examined differences between Caribbean groups (English Caribbean, Haitian, and

[1]Of note, the percentage of female participants was calculated based on 24 studies that reported the sex breakdown of their participants.

Dominican; Consedine et al., 2014; Consedine et al., 2005; Consedine et al., 2012). Fourteen studies included participants of Asian descent (56.0%; Berzenski & Yates, 2010; Butler et al., 2007; Fancourt et al., 2020; Gross & John, 2003; Gross et al., 2006; Haliczer et al., 2019; Kalibatseva, 2015; Kalibatseva & Leong, 2018; Lü & Wang, 2012; Morelen et al., 2013; O'Neill & Rudenstine, 2019; Qu & Telzer, 2017; Schick et al., 2020; Su et al., 2015). One of these studies compared among specific groups of Asian descent (Han, Hui, Uighur, Mongolian, and Tibetan; Lü & Wang, 2012). Another compared between individuals from China and from the U.S. (Qu & Telzer, 2017). Eight articles included Hispanic/Latinx participants (32.0%; Berzenski & Yates, 2010; Butler et al., 2007; Caplan, 1992; Gross & John, 2003; Gross et al., 2006; Kaplan, 2004; Schick et al., 2020; Su et al., 2015). One of these studies specifically compared between individuals from Puerto Rico and Latino-American individuals (Perez & Soto, 2011). One study each included American Indian/Alaska Native or Native Hawaiian/Pacific Islander (Schick et al., 2020) and bi-racial/ multiracial (O'Neill & Rudenstine, 2019) participants.

Most studies included measures assessing the use of emotion regulation strategies, with the most commonly used measure being the Emotion Regulation Questionnaire (n = 10, 40.0%; Arens et al., 2013; Butler et al., 2007; Gross & John, 2003; Kalibatseva, 2015; Kalibatseva & Leong, 2018; Melka et al., 2011; Perez & Soto, 2011; Qu & Telzer, 2017; Stupar et al., 2015; Su et al., 2015). Of these studies, one used translated versions of the Emotion Regulation Questionnaire, specifically German and Turkish (Perez & Soto, 2011). Other measures used to assess the use of emotion regulation strategies were the Present Personality Questionnaire (n = 2; Consedine et al., 2014; Consedine et al., 2005), the Emotion Regulation Questionnaire (n = 1; Lü & Wang, 2012; different from the Gross and John [2003] measure), the Emotion Regulation Strategies for Artistic Creative Activities Scale (n = 1; Fancourt et al., 2020), the Index of Self-Regulation of Emotion (n = 1; Consedine et al., 2012), and the Emotional Control Questionnaire (n = 1; Harel & Finzi-Dottan, 2018). Eight studies included measures assessing emotion regulation potential, including the Difficulties in Emotion Regulation Scale (n = 5; Berzenski & Yates, 2010; Brownlow et al., 2018; Haliczer et al., 2019; Morelen et al., 2013; O'Neill & Rudenstine, 2019), the Difficulties in Emotion Regulation Scale – Positive (n = 1; Schick et al., 2020), the Emotional Dysregulation Measure (n = 1; Newhill et al., 2009), and the Toronto Alexithymia Scale (n = 1; Kaplan, 2004).

All studies included in the present review made use of a cross-sectional design. With respect to analytic strategy, the most commonly used approach was an independent sample *t*-test (n = 11, 44.0%; Arens et al., 2013; Brownlow et al., 2018; Butler et al., 2007; Gross et al., 2006; Kalibatseva, 2015; Kalibatseva & Leong, 2018; Melka et al., 2011; O'Neill & Rudenstine, 2019; Perez & Soto, 2011; Qu & Telzer, 2017; Schick et al., 2020). Other analytic approaches used were multivariate analysis of variance/covariance (MANOVA/ MANCOVA, n = 7, 28.0%; Berzenski & Yates, 2010; Consedine et al., 2014; Consedine et al., 2005; Consedine et al., 2012; Lü & Wang, 2012; Morelen et al., 2013; Stupar et al., 2015), analysis of variance/ covariance (ANOVA/ANCOVA, n = 5, 20.0%; Gross & John, 2003; Haliczer et al., 2019; Harel & Finzi-Dottan, 2018; Kaplan, 2004; Newhill et al., 2009), structural equation modeling (n = 1, 4.0%; Fancourt et al., 2020), and regression (n = 1, 4.0%; Su et al., 2015).

Racial/Ethnic Differences in Emotion Regulation Strategies

Of the 17 studies which examined racial/ethnic differences in the use of emotion regulation strategies, 12 studies (70.6%) found significant racial and ethnic differences.

Twelve studies (76.5%) included samples within the U.S. In one study conducted in the U.S., Asian individuals endorsed significantly greater suppression (putatively maladaptive) of negative emotions compared to White individuals (Kalibatseva & Leong, 2018) and positive emotions compared to Hispanic and White individuals (Gross et al., 2006; Su et al., 2015). On the other hand, Qu and Telzer (2017) found that Chinese-born participants in the U.S. reported using suppression (putatively maladaptive) to the same degree as U.S.-born participants of European origin but reported greater use of cognitive reappraisal (putatively adaptive). One study found White individuals to report the lowest use of suppression (putatively maladaptive) compared to Asian, Black, and Hispanic individuals in the U.S. (Gross & John, 2003). Another study found that individuals of Eastern European origin in the U.S. engaged in the greatest attempts to inhibit their emotions (putatively maladaptive) compared to Haitian, Dominican, English Caribbean, and U.S. born individuals (Consedine et al., 2014). Conversely, Consedine et al. (2012) found Eastern European and U.S.-born women to use emotional suppression (putatively maladaptive) less than African American women, who in turn used emotional suppression (putatively maladaptive) less than English Caribbean, Dominican, and Haitian women. In summary, among the 12 U.S.-based studies on emotion regulation strategies, seven studies (58.3%) found evidence of racial and ethnic differences.

In terms of the five studies conducted outside the U.S., one found that White individuals used fewer putatively adaptive emotion regulation strategies (general strategies and approach and self-development strategies specifically) compared to non-White (i.e., Black, Asian, “mixed race,” and “other race”) individuals (Fancourt et al., 2020). In another study, Turkish individuals reported higher levels of emotional suppression (putatively maladaptive) compared to German individuals (Arens et al., 2013). Another third study found Jewish individuals to report higher levels of emotional control (putatively adaptive) compared to Arabic individuals (Harel & Finzi-Dottan, 2018). Another study found Dutch individuals to report the lowest use of suppression (putatively maladaptive) compared to individuals of Turkish and Moroccan descent in the Netherlands (Stupar et al., 2015). A final study found Han individuals to report the highest levels of emotion regulation strategies (cognitive appraisal – putatively adaptive – in particular) compared to Tibetan, Hui, Uighur, and Mongolian individuals (Lü & Wang, 2012). In summary, among the five studies conducted outside the U.S. on emotion regulation strategies, all found evidence of racial and ethnic differences.

Racial/Ethnic Differences in Emotion Regulation Potential

Of the eight studies that included a measure of emotion regulation potential, five found significant differences across racial and ethnic groups (62.5%). With respect to overall emotion regulation skills, one study in the U.S. found non-White and Hispanic individuals to report greater difficulties regulating positive emotions (putatively maladaptive) compared to White and non-Hispanic individuals, respectively (Schick et al., 2020), and two studies

in the U.S. found Asian individuals to have significantly more difficulties regulating their emotions (putatively maladaptive) compared to other racial and ethnic groups (Berzenski & Yates, 2010; Morelen et al., 2013). One study found that Black individuals reported higher levels of overall emotion dysregulation (putatively maladaptive) compared to White individuals (Newhill et al., 2009). When examining specific emotion regulation skills, one study in the U.S. found that Black individuals reported significantly fewer difficulties engaging in goal-directed behavior in the context of intense emotions (putatively maladaptive) compared to East Asian and White individuals, and that White individuals reported significantly more non-acceptance of emotions (putatively maladaptive) compared to Black and East Asian individuals (Haliczer et al., 2019). On the other hand, however, another study in the U.S. found that Asian individuals reported greater non-acceptance of their emotions (putatively maladaptive) and greater difficulties engaging in goal-directed behavior in the context of intense emotions (putatively maladaptive) compared to White and Black individuals (Morelen et al., 2013). One study in the U.S. found White individuals to report greater emotional awareness (putatively adaptive) compared to Hispanic and Asian individuals, whereas Asian individuals reported greater difficulties controlling impulsive behavior in the context of emotions (putatively maladaptive) compared to Hispanic and White individuals (Berzenski & Yates, 2010). Finally, one study in the U.S. found that Asian participants reported less use of strategies to regulate their emotions (putatively maladaptive) compared to Black participants (Morelen et al., 2013). Of note, all articles focusing on emotion regulation potential were conducted within the U.S.[2]

Discussion

In the present systematic review, we synthesized research examining racial and ethnic differences in emotion regulation strategies (i.e., specific tactics that individuals use to influence the experience and expression of emotions) and potential (i.e., the dispositional ways in which individuals understand, regard, and respond to their emotional experience). Of note, the majority of studies reviewed were conducted in the U.S. and involved comparison of white individuals to non-white racial and ethnic group(s). As such, we subsequently refer to ethnoracial minorities, which broadly captures non-white racial and ethnic groups in the U.S. Findings for emotion regulation strategies generally provide evidence for racial and ethnic differences (71% of studies), with ethnoracial minority individuals largely being found to exhibit greater use of emotion regulation strategies, primarily suppression of emotional experiences. Whereas the results for emotion regulation potential were more mixed (63% of studies found racial/ethnic differences), ethnoracial minority individuals were also largely found to report lower levels of emotion regulation potential. In sum, findings provided additional support for racial and ethnic differences in emotion regulation and underscore key avenues for future research.

Before discussing the primary study findings, it should be noted that there were considerable differences in sample and study characteristics. Most notably, there was variation in the type and number of racial and ethnic groups examined across studies reviewed

[2]See Supplemental Table 1 for a summary of results across the Emotion Regulation Questionnaire and the Difficulties in Emotion Regulation Scale – the most commonly used emotion regulation measures in the studies reviewed here.

here. As a result, caution should be taken in making generalizations about levels of emotion regulation across specific racial and ethnic groups. For instance, although usually classified as single racial and ethnic groups by researchers, there is significant within-group variability among individuals from different racial and ethnic groups (e.g., Asians); they represent various national origins that each have their own culture. Given the influence of culture on emotion (Markus & Kitayama, 1991, 1998; Matsumoto, 2006; Schwartz & Bardi, 2001), perhaps emotion regulation may vary not only as a function of race and ethnicity, but more specifically national origin. In this respect, future research would benefit from identification of specific cultural factors (e.g., ethnic identity, acculturation, values adherence) that may help to explain racial and ethnic differences in emotion regulation (Helms et al., 2005). Indeed, cultural values of collectivism and individualism have been tied to emotion regulation strategy implementation, with individualist cultures preferring expression of emotions and collectivistic cultures being more likely to apply emotional suppression (Ramzan & Amjad, 2017). These caveats may explain the mixed results of the current review which limit definitive conclusions. Specifically, whereas the majority of studies found more emotion regulation strategies and lower emotion regulation potential among ethnoracial minorities, others reported more emotion regulation strategies and lower emotion regulation potential among whites, and still others found no significant racial/ethnic differences in emotion regulation.

With these considerations in mind, findings from the current review primarily indicate greater use of emotion regulation strategies and lower levels of emotion regulation potential among ethnoracial minorities. These results align with the premise that ethnoracial minorities may be motivated to dampen emotional experiences and expression. To elaborate, specific cultural norms for emotional experiences and expression vary across racial and ethnic groups (Markus & Kitayama, 1991; Roseman et al., 1995). These cultural norms impact the extent to which different racial and ethnic groups encourage and reinforce emotional responding (Butler et al., 2007). In this regard, cultural worldviews, ideologies, values, and self-concept influence how members of different racial and ethnic groups appraise emotional stimuli (Markus & Kitayama, 1991, 1998; Matsumoto, 2006; Schwartz & Bardi, 2001), including whether emotional experiences are viewed as undesirable (Markus & Kitayama, 1991; Roseman et al., 1995), uncontrollable, and unpredictable (De Leersnyder et al., 2013). Ethnoracial minorities often prioritize the goals and needs of the group as a whole (Vargas & Kemmelmeier, 2013); thus, these individuals may prefer to down-regulate emotional experiences to maintain in-group harmony (Hofstede, 2001). Such down-regulation of emotional experiences may be reflected in the degree to which emotion regulation strategies are utilized as well as the types of emotion regulation potential that are experienced. Emotion regulation strategies serve to modulate the intensity and/or duration of emotional experiences, thus higher levels reflect more attempts to dampen emotions. Emotion regulation potential is also tied to the down-regulation of emotions, such as acceptance of emotions (i.e., emotional nonacceptance may lead to more attempts to down-regulate emotional experiences) and emotional urgency (i.e., impulsive responding may serve to dampen aversive emotional experiences). Alternatively, it is possible that greater use of emotion regulation strategies and lower levels of emotion regulation potential among ethnoracial minorities may be explained by some other third variables, such as lower

socioeconomic status or greater number/severity of life stressors. Future research is needed to test these hypotheses.

One important question that remains unanswered in this systematic review relates to the potentially divergent consequences of emotion regulation strategies and potential across racial and ethnic groups. Existing literature refers to emotion regulation strategies as "adaptive" versus "maladaptive" based on general patterns of associations with health outcomes (for a review, see Aldao et al., 2010). However, there has been growing attention to the influence of context in the consequences of emotion regulation strategies (Aldao, 2013; Aldao & Nolen-Hoeksema, 2012), with these studies documenting the potential for maladaptive outcomes for "adaptive" strategies and adaptive outcomes for "maladaptive" strategies. In the current study, we found evidence that ethnoracial minorities may be more likely to use both adaptive (e.g., cognitive reappraisal) and maladaptive (e.g., expressive suppression) emotion regulation strategies. While there is some evidence that greater use of both adaptive and maladaptive strategies is related to poorer health outcomes among predominantly white individuals in the U.S. (Dixon-Gordon et al., 2015), more use of emotion regulation strategies among ethnoracial minorities may reflect cultural norms related to emotional expression. For example, the value of interdependence among many ethnoracial minorities might encourage emotional suppression for prosocial reasons (Markus & Kitayama, 1991). In line with this hypothesis, Butler et al. (2007) found that while Americans adhering to Asian values reported more expressive suppression than those adhering to Western European values, expressive suppression was related to fewer negative social outcomes for Americans adhering to Asian vs. Western European values. The authors purported that expressive suppression may fulfill a broader range of social functions for individuals adhering to Asian values and thus may be less associated with negative emotion in Asian vs. Western European cultures. Similarly, another study in the U.S. found emotion regulation potential related to alcohol use for white women but not Black or Hispanic women (Weiss et al., in press); it was suggested that Black, Hispanic, and white individuals might be socialized to differentially respond to emotions to minimize risk for threat related to emotional expressions including race-related discrimination (e.g., anger). Notably, while differences in aspects of emotion regulation may function to maintain in-group harmony or cohesion (Hofstede, 2001), it is possible that they may serve to a detriment on the individual level, especially among individuals who are residing in individualist cultures like the U.S. Research that clarifies the health consequences of emotion regulation among different racial and ethnic groups at both the individual and group levels is warranted.

Some limitations require consideration when interpreting the findings of the current review. First, most studies reviewed were conducted in the U.S., thus emotion regulation among racial and ethnic groups that are not well-represented inside the U.S. or among examined racial and ethnic groups in contexts outside the U.S. remains unclear. Second, most reviewed studies involved comparison of white individuals to non-white racial and ethnic group(s) as opposed to other racial and ethnic groups. Third, none of the reviewed articles included data on sexual orientation and only seven reported on education and socioeconomic status, thus we were not able to examine the role of intersecting identities on emotion regulation. Fourth, despite the breadth of our search terms, we did not identify studies focused on racial and ethnic differences in all available emotion regulation measures, including alternative/

complementary models (e.g., Berking & Schwarz, 2014; Garnefsky & Kraaij, 2007) to those featured here (i.e., Gratz & Roemer, 2004; Gross, 2015). Lastly, all of the reviewed studies utilized cross-sectional designs, preventing causal determination of the relations examined.

Despite these limitations, the current systematic review advances the literature by highlighting racial and ethnic differences in emotion regulation. Our findings suggest the need for additional research on the relation of race and ethnicity to emotion regulation. For instance, as cultural worldviews, ideologies, values, and concepts (along with acculturation and enculturation patterns) may vary among racial and ethnic groups in the U.S. compared to other geographical locations (e.g., Asian Americans versus Asian individuals; Yasuda & Duan, 2002), further research examining differences in emotion regulation among racial and ethnic groups needs to be conducted using international samples. Additionally, research on emotion regulation is needed to compare non-white racial and ethnic groups to one another as well as to better understand racial and ethnic differences across national contexts. Further, there has been increased consideration in psychology to intersectionality in the past decade (Clauss-Ehlers et al., 2019). Intersectionality theory (Crenshaw, 1990) purports that identities intersect (e.g., race/ethnicity and gender) to create unique experiences; this may include expectations about emotional experiencing and responding. As such, investigations that consider the impact of intersectional identities is warranted. Notably, in order for investigators to fully evaluate the role of intersecting identities on emotion regulation, it is recommended that empirical studies in this area assess/report on these (and other) important aspects of one's identity. Moreover, research on racial and ethnic differences in emotion regulation using measures that capture other models of emotion regulation (e.g., Berking & Schwarz, 2014; Garnefsky & Kraaij, 2007) is needed. Lastly, future research is needed to investigate the nature and direction of these relations through prospective, longitudinal investigations.

Research that addresses these questions will inform culturally-tailored interventions aimed at improving emotion regulation. For instance, if subsequent evidence confirms that putatively maladaptive emotion regulation strategies are associated with positive outcomes for individuals from some racial and ethnic groups (e.g., expressive suppression for Asian individuals because it aligns with cultural norms of group harmony), emotion regulation treatments will need to be adapted to align with racial and ethnic cultural worldviews, ideologies, values, and self-concepts or else run the risk of advocating for behaviors that are culturally incongruent and thus potentially deleterious to specific individuals. This is an important avenue for future scientific inquiry.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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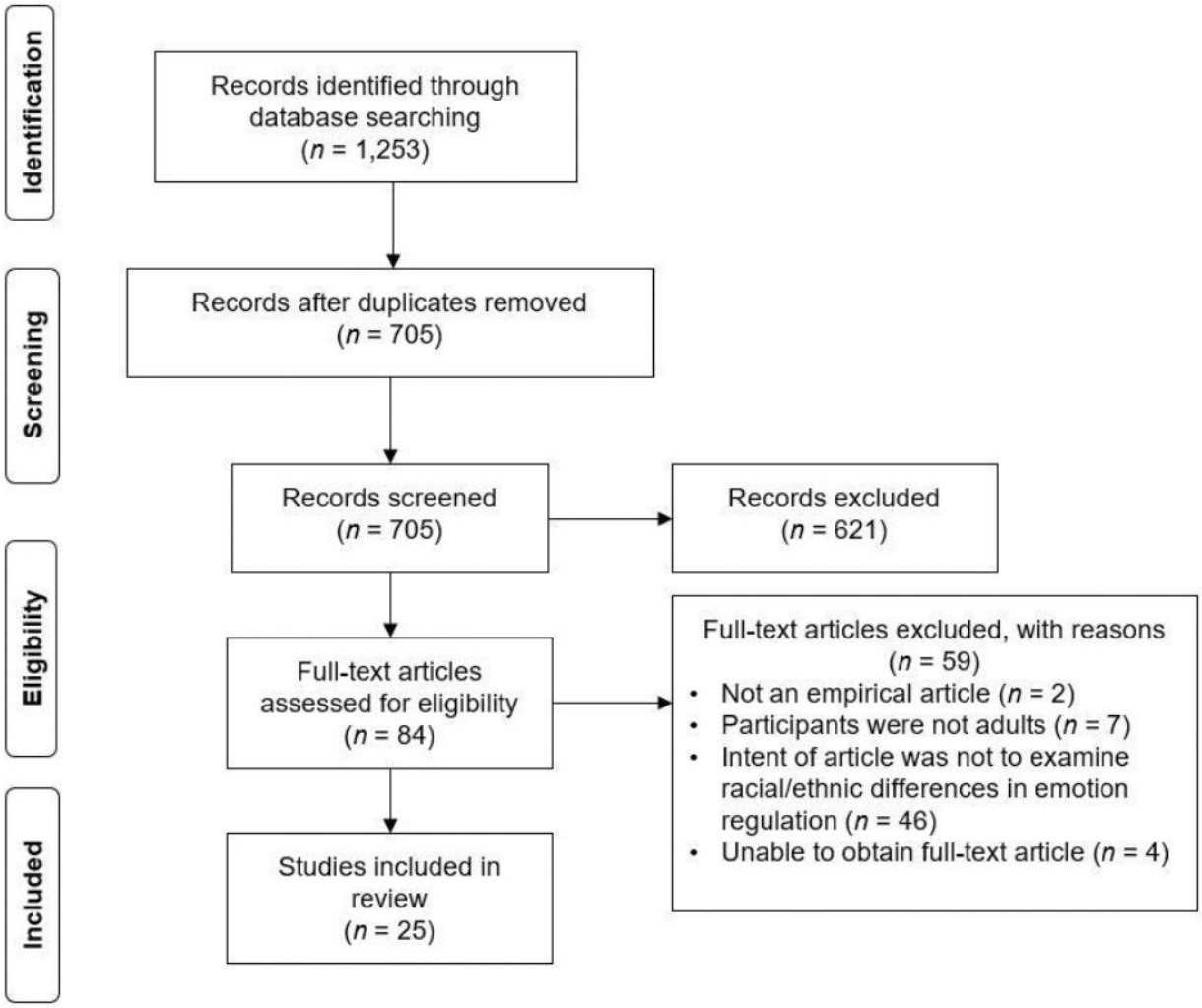

Figure 1.
PRISMA Diagram

Table 1.

Summary of Demographics of Final Studies

Sample Size	Setting	Subgroup (When Applicable): Age	Female Sex	Location
Arens, Balkir, & Barnow (2011)				
108	Community	Healthy Turkish: *M*=43.6 (*SD*=9.6) Healthy German: *M*=43.8 (*SD*=11.2) Depressed Turkish: *M*=44.4 (*SD*=8.1) Depressed German: *M*=43.4 (*SD*=10.7)	100%	Germany
Berzenski & Yates (2010)				
2,169	University	Dating: *M*=19.22 (*SD*=1.64) Non-dating: *M*=19.06 (*SD*=1.35)	63.8%	U.S.
Brownlow, Williams, Wiley, Sollers III, Koenig, & Thayer (2018)				
469	University	NA	NA	U.S.
Butler, Lee, & Gross (2007)				
166	University	*M*=20.2 (*SD*=1.9)	100%	U.S.
Consedine, Chentsova-Dutton, & Krivoshekova (2014)				
1364	Community	English Caribbean: *M*=58.4 (*SD*=7.0) Haitian: *M*=60.4 (*SD*=6.5) Dominican: *M*=58.2 (*SD*=6.1) Eastern European: *M*=60.8 (*SD*=6.1) U.S.: *M*=59.1 (*SD*=6.31)	100%	U.S.
Consedine, Magai & Horton (2005)				
1,361	Community	African American: *M*=58.9 (*SD*=6.2) English Caribbean: *M*=58.4 (*SD*=7.0) Haitian: *M*=60.4 (*SD*=6.5) Dominican: *M*=58.2 (*SD*=6.1) Eastern European: *M*=60.8 (*SD*=6.1) European American: *M*=59.4 (*SD*=6.5)	100%	U.S.
Consedine, Magai, Horton, & Brown (2012)				
1,364	Community	African American: *M*=58.9 (*SD*=6.2) English Caribbean: *M*=58.4 (*SD*=7.0) Haitian: *M*=60.4 (*SD*=6.5) Dominican: *M*=58.2 (*SD*=6.1) Eastern European: *M*=60.8 (*SD*=6.1) European American: *M*=59.4 (*SD*=6.5)	100%	U.S.
Fancourt, Garnett, & Müllensiefen (2020)				
22,563	Community	*M*=47.0 (*SD*=14.3)	55%	United Kingdom
Gross & John (2003)				

Sample Size	Setting	Subgroup (When Applicable): Age	Female Sex	Location
Sample 1: 791 Sample 2: 336	University	*M*=20	Sample 1: 67% Sample 2: 63%	U.S.
Gross, Richards, & John (2006)				
500	University	NA	61%	U.S.
Haliczer, Dixon-Gordon, Law, Anestis, Rosenthal, & Chapman (2019)				
Sample 1: 194 Sample 2: 88	University Community	Sample 1: *M*=20.61 (*SD*=4.59) Sample 2: *M*=31.00 (*SD*=10.95)	Sample 1: 77% Sample 2: 84%	U.S. Canada
Harel & Finzi-Dottan (2018)				
213	Welfare Dept	29.1% aged 20–30 49.8% aged 30–40 18.3% aged 40–50 2.8% aged 50–60	83%	Israel
Kalibatseva & Leong (2018)				
519	University	Chinese American: *M*=20.65 (*SD*=2.95) European American: *M*=19.87 (*SD*=2.88)	64%	U.S.
Kalibetseva (2016)				
521	University	Chinese American: *M*=20.64 (*SD*=2.94) European American: *M*=19.87 (*SD*=2.86)	64%	U.S.
Kaplan (2004)				
103	Family Planning Clinic	*M*=37.41 (*SD*=7.13)	100%	U.S.
Lü & Wang (2012)				
370	University	NA	48%	China
Melka, Lancaster, Bryant, & Rodriguez (2011)				
1,188	University	*M*=19.2 (*SD*=2.7)	55%	U.S.
Morelen, Jacob, Suveg, Jones, & Thomassin (2013)				
168	University	*M*=19.49 (*SD*=1.31)	57%	U.S.
Newhill, Eack, & Conner (2009)				
100	University Hospital	*M*=36.39 (*SD*=8.72)	86%	U.S.
O'Neill & Rudenstine (2019)				
177	Outpatient Clinic	*M*=28.54 (*SD*=8.41)	67%	U.S.
Perez & Soto (2011)				
287	University	Latino-American: *M*=18.94 (*SD*=1.03) Puerto Rican: *M*=20.53 (*SD*=2.36)	56%	U.S.
Qu & Telzer (2017)				
29	University	American: *M*=19.02 Chinese: *M*=19.38	100%	U.S.

Sample Size	Setting	Subgroup (When Applicable): Age	Female Sex	Location
Schick, Weiss, Contractor, Thomas, & Spillane (2020)				
373	MTurk	*M*=35.74 (*SD*=11.10)	57%	U.S.
Stupar, van de Vijver, & Fontaine (2015)				
1195	Centerdata	Dutch majority: *M*=49 (*SD*=1.52) Turkish/Moroccan Dutch: *M*=37 (*SD*=1.22) Antillean/Surinamese Dutch: *M*=43 (*SD*=1.44) Indonesian Dutch: *M*=53 (*SD*=1.32) Other Western immigrants: *M*=51 (*SD*=1.57) Other non-Western immigrants: *M*=40 (*SD*=1.56)	55%	Netherlands
Su et al. (2015)				
339	University	*M*=19.40 (*SD*=1.34)	64%	U.S.

Table 2.

Summary of Findings of Final Studies

Emotion Regulation Measure	Racial/Ethnic Groups	Design	Analytic Strategy	Findings on Racial/Ethnic Differences in Emotion Regulation Constructs
Emotion Regulation Strategies				
Arens, Balkir, & Barnow (2011)				
German (Abler & Kessler, 2009) and Turkish (Yurtsever, 2004) versions of the Emotion Regulation Questionnaire	52.78% Turkish 47.22% German	Cross-sectional	T-test	Healthy Turkish women reported higher levels of suppression but not cognitive reappraisal than Healthy German women. No significant differences in the use of expressive suppression and cognitive reappraisal were found across depressed Turkish and German women.
Butler, Lee, & Gross (2007)				
Emotion Regulation Questionnaire (Gross & John, 2003)	38% Asian American 45.2% European American 12.0% Other	Cross-sectional	T-test	No significant differences on expressive suppression reported between Asian and European Americans.
Consedine, Chentsova-Dutton, & Krivoshekova (2014)				
Present Personality Questionnaire (Consedine et al., 2002)	21.92% English Caribbean 22.36% Haitian 11.73% Dominican 11.07% Eastern European 32.92% U.S.	Cross-sectional	MANCOVA	The non-U.S. group had significantly higher emotional expressivity and emotion inhibition than the U.S. group. Among the non-U.S. group, (a) English Caribbean and Haitian women had less emotional expressivity than Dominican and Eastern European women; (b) English Caribbean women had more emotional expressivity than the Haitian women; and (c) Eastern European women had more emotion inhibition than all other non-U.S. subgroups.
Consedine, Magai & Horton (2005)				
Present Personality Questionnaire (Consedine et al., 2002)	21.60% African American 21.97% English Caribbean 22.34% Haitian 11.68% Dominican 11.09% Eastern European 11.32% European American	Cross-sectional	MANCOVA	No significant racial/ethnic differences on emotion inhibition.
Consedine, Magai, Horton, & Brown (2012)				
The Index of Self-Regulation of Emotion (Mendolia, 2002)	21.63% African American 21.92% English Caribbean 22.36% Haitian 11.73% Dominican 11.07 % Eastern European 11.29% European American	Cross-sectional	MANCOVA	Eastern European women were less emotionally repressive than other groups, followed by U.S.-born European American women. African American women were less emotionally repressive than English Caribbean, Dominican, and Haitian women.
Fancourt, Garnett, & Müllensiefen (2020)				
Emotion Regulation Strategies for Artistic Creative Activities Scale (Fancourt et al., 2019)	91.4% white 8.6% Non-white 7.0% Black 2.6% Southeast Asian 0.6% East Asian	Cross-sectional	SEM	White individuals vs. other racial/ethnic groups reported less use of emotion regulation strategies generally and approach and self-development strategies specifically; no differences were found for avoidance.

Emotion Regulation Measure	Racial/Ethnic Groups	Design	Analytic Strategy	Findings on Racial/Ethnic Differences in Emotion Regulation Constructs
	1.4% Multiracial 3.3% Other			
Gross & John (2003)				
Emotion Regulation Questionnaire (Gross & John, 2003)	Study 1: 5% African American 41% Asian American 28% European American 9% Latino Study 2: 4% African American 40% Asian American 33% European American 16% Latino	Cross-sectional	ANOVA	European Americans showed the least use of expressive suppression compared to other racial/ethnic groups across two samples. The three non-white racial/ethnic groups did not differ from each other in expressive suppression across the two studies. There were no racial/ethnic differences in cognitive reappraisal across the two studies.
Gross, Richards, & John (2006)				
Items assessing frequency of emotion regulation each week (Gross et al., 2006)	35% Asian American 39% European Americans	Cross-sectional	T-test	There was no effect of race/ethnicity for overall frequency of emotion regulation. Asian Americans reported greater use of suppression than European Americans for positive emotions. Specifically, Asian Americans reported significantly greater control of love, joy, surprise, and amusement, but not pride. There were no ethnic differences in suppression of negative emotions (i.e., sadness, anger, embarrassment, anxiety fear, shame, contempt, guilt, and disgust).
Harel & Finzi-Dottan (2018)				
Emotional Control Questionnaire (Roger & Najarian, 1989)	47.40% Jewish 52.60% Arabic	Cross-sectional	ANOVA	Jewish individuals had higher levels of emotional control compared to Arabic individuals.
Kalibatseva & Leong (2018)				
Emotion Regulation Questionnaire (Gross & John, 2003)	39.3% Chinese American 60.7% European American	Cross-sectional	T-test	The Chinese American sample endorsed higher (marginally significant) levels of expressive suppression than the European American sample. The Chinese American sample and the European American sample did not differ on cognitive reappraisal.
Kalibetseva (2016)				
Emotion Regulation Questionnaire (Gross & John, 2003)	39.3% Chinese American 60.7% European American	Cross-sectional	T-test	No significant ethnic/racial differences in cognitive reappraisal or expressive suppression were detected.
Lü & Wang (2012)				
Emotion Regulation Questionnaire (Huang & Guo, 2001)	15% Hui 14% Uighur 14% Mongolia 17% Tibetan 40% Han	Cross-sectional	MANOVA	Han college students reported higher levels of denial, inhibition, attention, amplification than Tibetan, Hui, Uighur, and Mongolian college students.
Melka, Lancaster, Bryant, & Rodriguez (2011)				

Emotion Regulation Measure	Racial/Ethnic Groups	Design	Analytic Strategy	Findings on Racial/Ethnic Differences in Emotion Regulation Constructs
Emotion Regulation Questionnaire (Gross & John, 2003)	28.9% African American 60.8% European American	Cross-sectional	T-test	No statistically significant differences were observed between African American and European Americans on expressive suppression and cognitive reappraisal.
Perez & Soto (2011)				
Emotion Regulation Questionnaire (Gross & John, 2003)	12.20% Latino-American 87.80% Puerto Rican	Cross-sectional	T-test	There were no significant differences between Latino Americans and Puerto Ricans on cognitive reappraisal.
Qu & Telzer (2017)				
Emotion Regulation Questionnaire (Gross & John, 2003)	48% American 52% Chinese	Cross-sectional	T-test	Chinese participants reported greater use of cognitive reappraisal in daily life than did American participants. Chinese participants reported the same level of expressive suppression in daily life as American participants.
Stupar, van de Vijver, & Fontaine (2015)				
Emotion Regulation Questionnaire (Gross & John, 2003)	32.55% Dutch majority 11.38% Turkish/Moroccan-Dutch 8.79% Antillean/Surinamese Dutch 8.54% Indonesian Dutch 26.19% Western immigrants 12.55% Non-Western immigrants	Cross-sectional	MANCOVA	Turkish and Moroccan members scored significantly higher on cognitive reappraisal than the Dutch, Indonesians, and Western immigrants. Dutch majority scored significantly lower on expressive suppression compared to Turkish and Moroccan immigrants.
Su et al. (2015)				
Emotion Regulation Questionnaire (Gross & John, 2003)	56.93% Chinese Americans 43.07% Mexican Americans	Cross-sectional	Regression	Chinese Americans reported greater suppression of positive emotions than Mexican Americans. Chinese Americans and Mexican Americans did not differ in the extent to which they suppressed negative emotions.
Emotion Regulation Potential				
Berzenski & Yates (2010)				
Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)	46.2% Asian 27.1% Hispanic 16.7% white MANOVA	Cross-sectional	MANOVA	Whites reported fewer difficulties with emotional awareness than Hispanics and Asians. Asians reported more emotion-driven impulsivity than Hispanics and whites.
Brownlow, Williams, Wiley, Sollers III, Koenig, & Thayer (2018)				
Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)	78.7% European American 21.3% African American	Cross-sectional	T-test	African Americans did not significantly differ from European Americans on overall emotion regulation potential.
Haliczer, Dixon-Gordon, Law, Anestis, Rosenthal, & Chapman (2019)				
Difficulties in Emotion Regulation Scale Gratz & Roemer, 2004)	Sample 1: 50.52% white 21.65% Black 27.83% East Asian Sample 2: 71.59% white	Cross-sectional	ANOVA	Sample 1: The Black group reported significantly fewer difficulties engaging in goal-directed behavior than the East Asian and white groups. No other differences emerged. Sample 2: Black and East Asian groups reported significantly less emotional nonacceptance than the white group. No other differences emerged.

Emotion Regulation Measure	Racial/Ethnic Groups	Design	Analytic Strategy	Findings on Racial/Ethnic Differences in Emotion Regulation Constructs
	11.36% Black 17.05% East Asian			
Kaplan (2004)				
Toronto Alexithymia Scale (Taylor et al., 2003)	73.8% African American 21.4% Hispanic	Cross-sectional	ANOVA	There were no significant differences in emotional awareness or differentiation across race/ethnicity.
Morelen, Jacob, Suveg, Jones, & Thomassin (2013)				
Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)	36.31% white 30.36% Black 33.33% Asian	Cross-sectional	MANOVA	Asian participants reported experiencing more deficits in overall emotion regulation potential than white and Black participants. Asian participants reported less emotional acceptance than white and Black participants, more interference with their goals than white and Black participants, and less implementation of effective emotion regulation strategies than Black participants. There were no significant differences between white and Black participants on emotion regulation potential (overall scale or subscales).
Newhill, Eack, & Conner (2009)				
General Emotional Dysregulation Measure (Newhill et al., 2004)	17% African American 27% white	Cross-sectional	ANCOVA	African Americans reported higher levels of emotional dysregulation compared to white Americans.
O'Neill & Rudenstine (2019)				
Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)	41.5% white 18.2% Black 9.1% Asian 31.3% Other	Cross-sectional	T-test	No differences in emotion regulation potential were observed as function of race.
Schick, Weiss, Contractor, Thomas, & Spillane (2020)				
Difficulties in Emotion Regulation Scale – Positive (Weiss, Gratz, et al., 2015)	75.9% white 12.3% Hispani 10.5% Black 11% Asian 5.1% American Indian/Alaska Native 0.5% Native Hawaiian/Pacific Islander	Cross-sectional	T-test	Hispanic individuals endorsed greater deficits in overall positive emotion regulation potential than non-Hispanic individuals. Non-white individuals endorsed greater deficits in overall positive emotion regulation potential than vs. white individuals.