Mental Health & Prevention 32 (2023) 200299

Contents lists available at ScienceDirect

Mental Health & Prevention

journal homepage: www.elsevier.com/locate/mhp

The role peer responses to adolescent expression of emotions plays in their emotion regulation: A systematic literature review

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ARTICLE INFO

Keywords:
Emotion socialization
Emotion regulation
Adolescence
Peers
Review

ABSTRACT

Introduction: Peer responses to adolescents' emotional expressions (PREE), are thought to influence the continued development of emotion regulation (ER). Unsupportive (e.g., dismissive) PREE, for example, are expected to be associated with greater maladaptive ER. Poor ER is known to place adolescents at risk of psychopathology. The aim of this systematic review was to collate and synthesize the emerging evidence exploring the role that peer emotion socialization, specifically PREE, plays in adolescent ER and identify future directions.
Methods: In adherence with PRISMA guidelines, PsychINFO, Medline Complete, CINAHL Complete, Scopus and Web of Science were searched on April 20th, 2021, May 28th, 2022, and April 12th, 2023 for English language reports published after 1998. To be included, studies needed to report on PREE and its relation to adolescent ER.
Results: A total of eight studies, one qualitative and seven quantitative, met inclusion criteria and had a combined *N* of 785 participants (aged 10–18 years). Studies were primarily undertaken in the US and mostly included males and females, with one study only including female participants.
Conclusions: Although only eight studies were identified, the review identified preliminary evidence for an association between PREE and ER in adolescents. This association appeared to vary depending on adolescent gender, age, the closeness of the friendship and the PREE. Several limitations were identified, and suggestions are made for future research in this emerging area.

1. Introduction

Adolescence is a sensitive period for the development and consolidation of emotion regulation (ER; Ahmed et al., 2015). Deficits in the ability to manage emotions can place adolescents at risk of psychopathology (Aldao et al., 2016) and ER skills developed during adolescence are likely to underpin adult emotional functioning (Ahmed et al., 2015). Understanding factors that contribute to the development of healthy ER during this developmental window is crucial given the implications for mental health over the lifespan. Throughout childhood and adolescence, ER skills develop via a broad range of influences and within the context of interactions with others via observation, how others respond to emotional expressions, the emotional climate of the family, the characteristics of the child (e.g., temperament and genetics), and the broader socio-cultural environment (Cole et al., 2010; Morris et al., 2007; Silvers, 2022). One understudied aspect of how adolescents continue to refine their ER skills is peer emotion socialization. This includes the supportive and unsupportive responses that adolescents receive from peers in relation to their emotional expressions (Miller-Slough & Dunsmore, 2020).

Adolescence is also a period of transition, during which significant neurobiological, psychological and social changes occur alongside changing interpersonal, educational, parental, and societal demands (Casey et al., 2010; Steinberg, 2008). In addition, adolescents (aged between 10-19 years; World Health Organization, 2014) are faced with various developmental tasks, many of them social. This includes adjusting to increased autonomy and independence, identity formation, increased engagement in romantic relationships and further peer relationship development (Booker & Dunsmore, 2017; Meschke et al., 2012). Transition to secondary school, increased interactions with peers outside of school settings and experimentation with identity (Booker & Dunsmore, 2017; Laursen & Veenstra, 2021), often involves a renegotiation of parent-adolescent relationships with a shift to increased reliance on peers. Adolescents are also particularly susceptible to peer

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https://doi.org/10.1016/j.mhp.2023.200299
Received 28 June 2023; Received in revised form 21 August 2023; Accepted 4 September 2023
Available online 9 September 2023

influence due to the many changes they experience and an increased need for similarity and conformity (Laursen & Veenstra, 2021).

Adolescents spend a considerable amount of time with peers and increasingly rely on their emotional support (Miller-Slough & Dunsmore, 2020). Accordingly, interest in the role that peers play in the socialization of ER during adolescence has led to several studies investigating the influence peers and friends have on the continued development of ER during adolescence, in particular the way in which peers respond to adolescent expressions of emotions (PREE). This review systematically identifies those studies and synthesizes what is known about the role that PREE plays in adolescent ER.

1.1. Emotion regulation during adolescence

ER refers to one's ability to recognize and understand emotions as well as appropriately manage and express emotions across environmental contexts (Miller-Slough & Dunsmore, 2020). Difficulties in awareness, lack of clarity and understanding emotions, non-acceptance of emotions, and limited access to emotion regulation strategies underpin emotion dysregulation (Gratz & Roemer, 2004). ER ability generally improves throughout adolescence and into young adulthood in neurotypical populations (Riediger & Klipker, 2014; Silvers et al., 2012). In comparison to children, adolescents are superior at identifying and receiving emotional cues. As they progress through adolescence, use of more sophisticated ER strategies (e.g., cognitive reappraisal) and fewer maladaptive strategies (e.g., habitual use of expressive suppression and situational avoidance) become apparent and result in more proficient emotion management (Booker & Dunsmore, 2017; Zimmermann & Iwanski, 2014). Adaptive strategies are applied with increasing effectiveness by adolescents, stabilizing by late adolescence (Silvers et al., 2012).

However, ER ability does not necessarily develop linearly, with a 'dip' in the application of some adaptive strategies evident around mid-adolescence (12 to 15 years), including less use of problem-solving and cognitive reappraisal and increased use of distraction and suppression (Cracco et al., 2017). This is thought to be due to heightened emotion sensitivity and reactivity caused by rapid onset pubertal changes and the navigation of challenging new life tasks which results in cognitive overload limiting adolescents' capacity to engage adaptive ER strategies they may have once engaged in (Cracco et al., 2017). Coupled with a not yet mature ER system, while navigating increasingly complex tasks and changes, mid-adolescence is a vulnerable period where the onset of enduring psychopathology lies for many adults (Ahmed et al., 2015). Nevertheless, by early adulthood, typically developing young people become more adept at effectively applying ER strategies, which assist them to better navigate social interactions and life challenges.

1.2. Peer emotion socialization of adolescent emotions

Skills in recognizing, understanding, and regulating emotions are learnt during interactions with significant others, including parents and peers (Eisenberg et al., 1998; Morris et al., 2007). Role modelling, responses to emotional expressions and direct discussions about emotions constitute key components of emotion socialization (Morris et al., 2007). Throughout childhood and into the adolescent period, parents play a key role in the socialization of emotions (Eisenberg et al., 1998; Morris et al., 2007). As children enter adolescence they increasingly turn towards their peers for emotional support, spending more time with them and becoming more susceptible to their influence (Dishion & Tipsord, 2011; Steinberg & Morris, 2001). Evidence suggests that adolescent peers are important socializers of emotions. For example, positive best friendship qualities (e.g., companionship, affection and approval) protect adolescents (aged 14 to 19 years) from feeling socially anxious, and the inverse is true for negative best friendship qualities (La Greca & Harrison, 2005). Friends also influence the use of emotion terms by adolescents, with adolescents whose friends react supportively to their emotional expressions being more likely to use emotion terms themselves, a finding consistent with the parent emotion socialization literature (Legerski et al., 2014).

Research has identified five types of PREE's that are thought to encourage or discourage emotional expressions to separate emotions (e.g., sadness, anger, fear) or to combined emotions (e.g., negative emotions). Additionally, PREE's have been examined as discrete responses and grouped (i.e., supportive/unsupportive) responses. Discrete responses include reward (e.g., comforting and empathizing), punish (e.g., disapproving or making fun of the expression), override (e.g., distracting from the emotion they are experiencing), neglect (e.g., ignoring the expression) and magnify responses (e.g., matching and amplifying emotion; Klimes-Dougan et al., 2014). Reward and override have been considered supportive responses to emotions whereas magnify, neglect and punishment are typically considered unsupportive. Unlike supportive responses, which have been found to be associated with more adaptive ER in adolescents, unsupportive responses have been found to be associated with less adaptive ER, including an overreliance on suppression and internalization of difficult emotions, as well as psychological distress (see Morris et al., 2007; Miller-Slough & Dunsmore, 2016; Garside & Klimes-Dougan, 2002).

To date, possibly due to measurement of peer emotion socialization being modelled on measurement of parent emotion socialization (Magai, 1996), it has been largely assumed that PREE mirror parental emotion socialization responses in approach and in their impact on adolescent outcomes, including ER (Klimes-Dougan et al., 2014; Miller-Slough & Dunsmore, 2016). However, despite the peer emotion socialization literature being relatively new, differences between what adolescents consider supportive or unsupportive PREE's have already emerged. For example, an overriding parental response has been found to be associated with poorer adolescent outcomes (e.g., internalizing problems; Magai, 1996), whereas overriding PREE have been found to correlate with improved socioemotional functioning (Klimes-Dougan et al., 2014).

In their 2016 review, Miller-Slough and Dunsmore identified 15 studies that examined peers as agents of emotion socialization. Overall, the authors concluded that parent and peer emotion socialization (including, emotion discussion and responses to adolescent emotions) significantly impacts adolescent socioemotional functioning. However, despite the key role that ER plays in mental health (Ahmed et al., 2015) only three studies that explored ER as an outcome were identified. In all instances, ER was considered as a mediator rather than as a direct outcome of emotion socialization and the socializing agent was the parent only, not peers. Theoretically, PREE are predicted to have a direct impact on ER (Morris et al., 2007). As such, we aimed to identify and review research that specifically looked at the relationship between PREE and adolescent ER. By identifying the available evidence, emerging patterns, gaps, methodological and measurement issues could be identified and guide this emerging field.

1.3. The current review

This systematic literature review is the first to summarize and synthesize findings that explored the direct influence of PREE on ER in adolescents. It reviews what is known to date of the ways peers respond to adolescent emotions as well as how their responses might influence adolescent ER. Importantly, a better understanding of the mechanisms that underpin the development of ER skills during adolescence can inform the development of interventions that aim to improve ER, including via a core aspect of emotion socialization, PREE.

2. Method

This systematic literature review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021).

2.1. Eligibility criteria

To comprehensively capture this new area of research, studies were required to report on the influence of one or more PREE (Klimes-Dougan et al., 2014) on adolescent (10 to 19 years; World Health Organization, 2014) ER. Studies published in English since 1998 were included, to align with Eisenberg et al.'s (1998) seminal conceptualisation of emotion socialization.

2.2. Information Sources

Databases (PsychINFO, Medline Complete, CINAHL Complete, Scopus and Web of Science Core Collection) were electronically searched on April 20th, 2021, May 28th, 2022, and again on April 12th, 2023. Backward and forward screening were also conducted through Scopus and Google Scholar on May 5th, 2021, May 28th, 2022, and April 12th, 2023.

2.3. Search strategy

Authors searched titles and abstracts with relevant emotion socialization, peers and emotion regulation keywords. See Appendix A for full search strategy. 'Adolescence' was not included to prevent missing papers. Manual screening for papers relevant to the target age range was undertaken. The search was not restricted to peer-reviewed articles to reduce the risk of publication bias (Franco et al., 2014).

2.4. Selection Process

The lead author (M.S.D.) worked independently at each screening stage. Following de-duplication, the titles and abstracts were screened and were removed if they didn't meet inclusion criteria. Full texts of remaining articles were read to assess eligibility for inclusion. Papers with unclear selection criteria were discussed (M.S.D, E.P-C, C.E.K).

2.5. Data collection process and data items

Independent double extraction of the relevant data from the reports was undertaken by M.S.D and E.P-C including first author and publication year, sample size, participant demographics, study design, PREE and ER measures, and key findings.

2.6. Quality assessment

The quality of included studies was assessed using the Protogerou and Hagger (2020) checklist for survey studies in psychology. The consolidated criteria for reporting qualitative research (Tong et al., 2007) was used to assess the quality of the qualitative study.

2.7. Synthesis methods

Study characteristics and key findings regarding the influence of PREE on ER during adolescence were tabulated, narratively summarized, and synthesized.

3. Results

3.1. Study selection

The search identified 186 citations, resulting in 87 unique publications following de-duplication (Fig. 1). After title and abstract screening, which excluded 65 citations for not including both key constructs, 22 citations were retained. Seventeen citations were excluded following full text review. Additional citations (Braunstein, 2016; Shayanfar, 2016; Simard, 2013) were identified through other sources, resulting in eight studies being included.

3.2. Study and sample characteristics

All studies were published since 2013, five were published in peer-reviewed journals (Borowski et al., 2018; Cui et al., 2020; Hale et al., 2023; Miller-Slough and Dunsmore, 2019, 2020), and three were

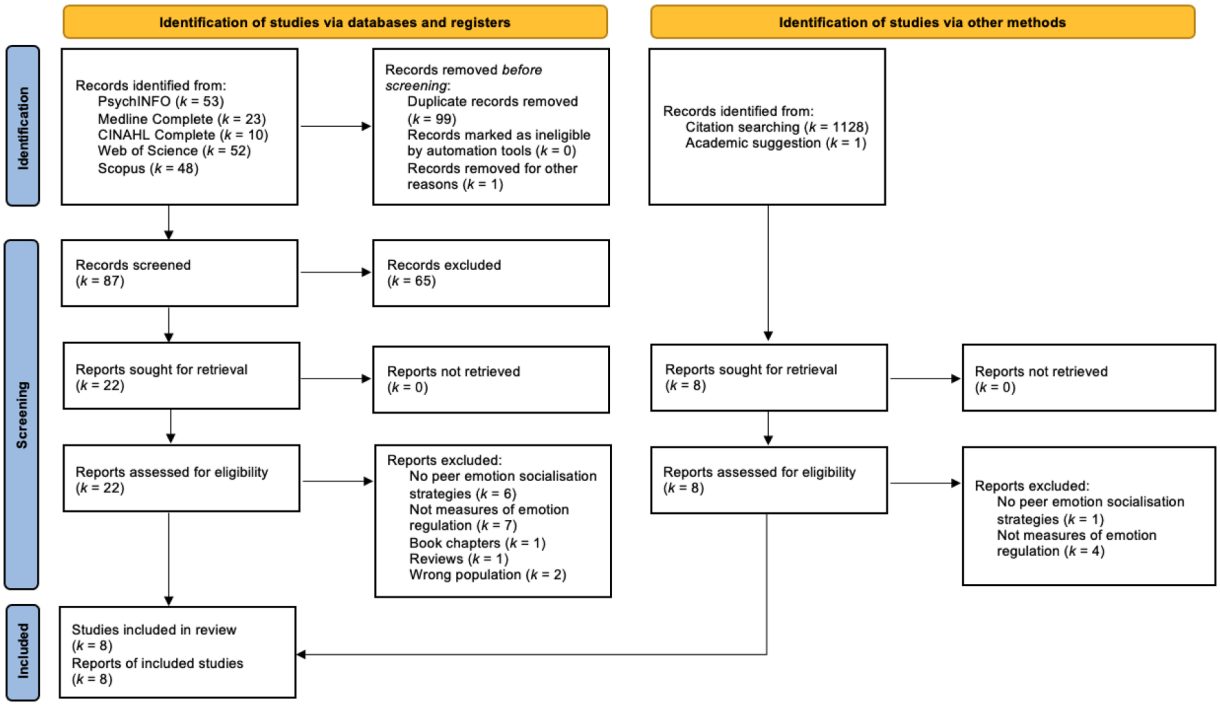

Fig. 1. PRISMA flow chart of systematic literature search.

unpublished theses (Braunstein, 2016; Shayanfar, 2016; Simard, 2013). Studies were conducted in the US, except two (Simard, 2013 and Shayanfar, 2016). They predominantly included Caucasian, middle to upper socioeconomic status participants, except for two studies that recruited ethnically diverse samples with participants of low (Cui et al., 2020) or varied socioeconomic (Simard, 2013) backgrounds. Participants ($N = 785$) were recruited from the community, and aged 10 to 18 years, with most studies including male and female participants. See Table 1.

3.3. Design and Construct Measurement of Studies

Two studies implemented cross-sectional designs (Borowski et al., 2018; Miller-Slough & Dunsmore, 2020) while the remaining five quantitative studies utilized a longitudinal design (Braunstein, 2016; Cui et al., 2020; Hale et al., 2023; Miller-Slough & Dunsmore, 2019; Simard, 2013).

PREE was consistently quantitively assessed via adolescent self-report of their perceptions of PREE by their peers. The adolescent self-report YYFS was used in six studies (Borowski et al., 2018; Braunstein, 2016; Hale et al., 2023; Miller-Slough & Dunsmore, 2019, 2020; Simard, 2013) and one used the adapted adolescent self-report Emotions as a Child Scale (EAC; Cui et al., 2020). Additionally, Simard (2013) and Hale et al. (2023) adpated the YYFS to focus on anger and sadness/anxiety and anger and sadness/worry respectively. Miller-Slough and Dunsmore (2020) also incorporated an experimental task where peer emotion discussion was observed and coded by researchers (based on Dunsmore et al., 2013). The identified 'peer' varied between studies, with some asking about peers more broadly, whereas others asked about specific and close peers such as their 'best friend'.

Adolescent ER was assessed via adolescent self-report by all quantitative studies except for one which used parent-report (Miller-Slough & Dunsmore, 2019). The most common self-report measure of ER was the Children's Emotion Management Scales (CEMS; Borowski et al., 2018; Braunstein, 2016; Cui et al., 2020; Hale et al., 2023). The other studies used the Difficulties in Emotion Regulation Scale (DERS; Miller-Slough & Dunsmore, 2020), the Emotion Regulation Checklist (ERC; Miller--Slough & Dunsmore, 2019) or an adapted version of the Regulation of Emotions Questionnaire (REQ; Simard, 2013). One study also incorporated the psychophysiological measurement of heart-rate variability (HRV), with greater HRV indicating more adaptive ER (Miller-Slough & Dunsmore, 2020).

The qualitative study (Shayanfar, 2016) implemented a semi-structured interview using an enhanced critical incident technique. Participants had to recall emotionally salient situations during the past year and the related peer interactions. They then described whether these helped or hindered regulating their negative emotions, and what would have been helpful to them at the time.

3.4. Study outcomes

Combined, the seven quantitative studies explored the relationship between nine different PREE and ER (see Table 1). The only qualitative study (Shayanfar, 2016) identified 10 PREE. All studies focused on peer responses to negative emotions. Two studies explored peer responses to separate emotions (Cui et al., 2020; Hale et al., 2023; Simard, 2013), while the others did not separate peer responses to different emotions, combining responses to anger, sadness, and worry (Borowski et al., 2018; Braunstein, 2016; Miller-Slough & Dunsmore, 2019; 2020).

PREE that were associated with less dysfunctional (e.g., Borowski et al., 2018) or more adaptive (e.g., Simard, 2013) ER included supportive, reward, override, magnification, punishment, supportive presence, sharing perspective and empathizing (see Table 1 for details of specific studies). PREE that were associated with greater dysfunctional (e.g., Borowski et al., 2018) or less adaptive (e.g., Cui et al., 2020) ER included aggression, relational aggression, overt aggression, magnification, neglect, punishment, and co-rumination. PREE that were not related to ER in some studies included reward, override, magnification, punishment, neglect, dismissiveness, co-rumination, relational aggression and overt aggression. In the qualitative study, giving advice, encouragement and cheering up, expressing concern, distracting, withdrawing, taking action and punishment were inconsistently helpful or hindering in regulating negative emotions.

3.5. Quality assessment of included studies

The average quality of quantitative studies was 'questionable', scoring an average of 72.9% (Protogerou & Hagger, 2020; Appendix B), with only four studies reporting a priori sample size justification and power calculation (Hale et al., 2023; Miller-Slough & Dunsmore, 2019; Simard, 2013). Positively, most studies adequately detailed their participant recruitment strategy, measurement approach, data collection and analysis.

The quality of the qualitative study (Shayanfar, 2016) was 84%. Some areas for improvement included detailing the occupation and gender of the researcher/interviewer, whether repeat interviews were conducted, whether the full transcripts were returned to participants for correction, and the coding tree description.

4. Discussion

This review summarizes the influence of PREE on adolescent ER. Overall, eight studies were identified, with three of these belonging to a larger project. Some, but not all studies found that PREE influence adolescent ER, which is variably impacted by gender, age, friendship closeness, and emotion being socialized.

4.1. Supportive PREE and SSSon

Three quantitative studies found that supportive responses (reward) from "same sex best friends" (Borowski et al., 2018; Hale et al., 2023) or "very best friends" (Simard, 2013) were associated with adolescent ER. Two of these studies also recruited the "best friend" (Borowski et al., 2018; Hale et al., 2023), which may have helped the adolescent remain focused on this particular friendship when completing assessments. Studies that found no association between reward PREE and adolescent ER seemed to focus on peers or friends more generally (variably referred to as, "close friend", "one of their closest friends" or "female friend of a similar age"; Braunstein, 2016; Cui et al., 2020; Miller-Slough & Dunsmore, 2020). However, one study (Miller-Slough & Dunsmore, 2019) which referred to a "best friend" in the questionnaire did not find a relationship. Differences in terminology and study design may suggest that when the adolescent is focused on their "best friend", measurement of PREE captures a closer relationship that might be more influential on ER. It therefore suggests that rewarding responses might matter most when offered by a "best friend" rather than another peer e.g., a "female friend of a similar age" (Cui et al., 2020). Research indicates that the closeness of adolescent friendships is associated with how influential friendships are (e.g., Cuadros & Berger, 2016). Future research may consider assessing friendship strength to better understand the impact of PREE's.

The only qualitative study (Shayanfar, 2016) identified five supportive PREE: supportive presence, sharing perspective, empathizing, giving advice and encourage/cheering up. Supportive presence, sharing perspective and empathizing were consistently reported as conducive to adolescents' regulation of negative emotions. This study suggests that empathic PREE and supportive presence might be co-regulating for adolescents, promoting emotion acceptance, which may positively impact adolescent's ability to process emotions (Kehoe & Havighurst, 2018).

In some studies, however, discrete override and magnify PREE were also found to be supportive, associated with less dysfunctional or more adaptive ER (Borowski et al., 2018; Hale et al., 2023; Miller-Slough &

Table 1
Characteristics of Included Studies that Explored the Role of PREE on Adolescent Emotion Regulation.

First Author (year)	*N* (% F)	Age Range in Years (*M; SD)*	Nationality and SES	Design	Measurement			Key Findings
					PREE	R of PREE	ER	
Borowski (2018)^	101 same-sex best friend dyads (53%)	10-16 (12.66; 1.02)	White (75.7%) Black (17.8%) Other (6.5) Mean Hollingshead Index 49.63	Cross-sectional	YYFS (adolescent SR) – averaged sadness, anger and worry scale	α = .82 - .89	CEMS (adolescent SR)	-Greater support (combined reward and override) by peers related to lower dysfunctional ER of negative emotions (b = -0.22**) -Greater aggressive socialization by peers (relational & overt combined) related to greater dysfunctional ER of negative emotions (b = 0.22**) -Greater magnifying responses by peers related to greater dysfunctional ER of negative emotions (b = 0.19*)
Braunstein (2016)^	T1: 202 (52.5%) T2: 139 (54.5%)	T1:10-15 (12.66; 1.01) T2:12-16 (14.50; 0.98)	White (76.2%) Black (17.8%) Other (6%) Mean Hollingshead Index 49.62	Longitudinal (23 months from T1-T2)	YYFS (adolescent SR) – averaged sadness, anger and worry scale	α = .85 - .91	CEMS (adolescent SR)	-T1 reward did not predict T2 ER of negative emotions for girls (b = -.01) or boys (b = .03) -T1 override did not predict T2 ER of negative emotions for girls (b = -.02) or boys (b = .03) -T1 magnify did not predict T2 ER of negative emotions for girls (b = -.01) or boys (b = .01)
Cui (2020)	T1/2: 160 (100%) T3: 129 (100%)	T1/2:12-18 (13.94; 1.23) T3:13-20 (15.61; 1.26)	African American (45%) European American (25%) Latino American (3.1%) Other (11.3%) Low-Income Families	Longitudinal T1 (week 1) T2 (week 2-3) T3 (approx. 2 years later)	Adapted EAC (adolescent SR) - separate sadness and anger scales	α = .63 - .86	CEMS (adolescent SR)	-T1 reward of girls' sadness (r = .13) or anger (r = .16) did not relate to T3 ER -T1 override of girls' sadness did not relate to T3 ER (r = .16) -T1 punish of girls' sadness did not relate to T3 ER (r = -.02) -T1 neglect of girls' anger did not relate to T3 ER (r = -.08) -Greater T1 magnification of girls' anger related to poorer ER at T3 (r = -.20*)
Hale (2023)^	T1: 209 (52.5%) T2: 168 (52.1%) T3: 116 (52.9%)	T1:10-16 (12.66; 1.02) T2: 12-18 (14.70; 1.05) T3:14-19 (16.30; 1.72)	White (75.7%) Black (13.8%) Latinx (2.9%) Mean Hollingshead Index 49.63	Longitudinal T1 (0 years) T2 (2 years) T3 (4 years)	YYFS (adolescent SR) - averaged sadness/worry and separate anger scales	α = .70 - .88	CEMS (adolescent SR)	-TI reward of anger was associated with higher anger regulation initially (b = 0.10*), but not over time -T1 override of anger was associated with higher anger regulation initially (b = 0.13**), but not over time -T1 punish of anger was associated with lower anger regulation initially (b = -0.62**) but steeper positive increases in their anger regulation across time (b = 0.33**) -Neither T1 magnify nor T1 neglect of anger were associated with anger regulation initially, or over time
Miller-Slough (2019)	T1: 87 APD (57.4%) T2: 57 APD (63.2%) T3: 42 APD (54.8%)	T1:13-15 (14.23; 0.5) T2: N/A T3: N/A	Caucasian (85.2%) Biracial (8%) African American (2.3%) Asian American (1.1%) Other (3.4%)	Longitudinal T1 (0 months) T2 (8 months) T3 (13 months)	YYFS (adolescent SR) - averaged sadness, anger and worry scale	α = .84 - .95	ERC (parent-report)	-Reward not associated with ER for girls (β = 0.06) or boys (β = -0.04) -Override not associated with ER for girls (β = -0.19) but greater override predicted increased ER in boys (β = 0.95**) -Magnify not associated with ER for girls (β = -0.33) but greater magnifying predicted increased ER in boys (β = 1.26*) -Greater punitive responses predicted decreased ER for girls (β = -1.04*) but did not predict

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Table 1 (*continued*)

First Author (year)	*N* (% F)	Age Range in Years (*M; SD)*	Nationality and SES	Design	Measurement			Key Findings
					PREE	R of PREE	ER	
								ER for boys (β = -0.46) -Neglect not associated with ER for girls (β = -0.21) or boys (β = 0.17)
Miller-Slough (2020)	30 adolescent-parent-same gender close friend triads (60%)	13-18 (14.40; 1.47)	Caucasian (90%) Biracial (10%) Middle to Upper SES	Cross-sectional	YYFS (adolescent SR) - averaged sadness, anger and worry scale; Discourse Task observed & coded by experimenter	α = .75 - .94 ICC = .76 - .97	DERS (adolescent SR); HRV	-Neither adolescent-reported nor observed peer emotion coaching predicted adolescent ER (Bonferroni-corrected, all *ps* > 0.007) nor correlated with HRV (r = -0.21 and r = -0.13, respectively) -Neither adolescent-reported nor observed peer emotion dismissing (average of punish and neglect) predicted adolescent ER (Bonferroni-corrected all *ps* > 0.007) nor correlated with HRV (r = 0.22 and r = 0.11, respectively) -Neither adolescent-reported nor observed peer co-rumination predicted adolescent ER (Bonferroni-corrected *ps* > 0.007); Adolescent reported co-rumination did not correlate with HRV (r = -0.12); observed co-rumination negatively correlated with HRV (r = -0.39*)
Shayanfar (2016)	16 (44%)	12-15 (12.75; 0.93)	Canadian (56.2%) European (18.8%) Asian (12.5%) Hispanic (12.5%)	Qualitative (Enhanced Critical Incident Technique)	Semi-structured retrospective interview	N/A	Semi-structured retrospective interview	In relation to the regulation of negative emotions: - A supportive presence was perceived as helpful (12)[a] or thought to help (2) - Expressing concern was perceived as helpful (4), thought to help (2), or hindering (2) - Withdrawing was perceived as hindering (12), helping (3) or thought to help (2) - Empathizing was perceived as helping (7) or thought to help (3) - Encouragement and cheering up was perceived as helping (23), thought to help (3), or perceived as hindering (5) - Sharing perspective was perceived as helping (9) or thought to help (2) - Giving advice was perceived as helping (19), thought to help (1), or hindering (10) - Distracting was perceived as helping (16), thought to help (4), or hindering (1) - Taking action was perceived as helping (16), thought to help (8)[a], or hindering (5) - Punishment was perceived as hindering (10) or thought to help (1)
Simard (2013)	253 (57%)	T1-T4: N/A T5:10-12 (11.17; 0.61)	Canadian (35%) Quebecois (32%) Other (34%) Economically Diverse	Longitudinal T1 (0 weeks) T2 (6 weeks) T3 (12 weeks) T4 (18 weeks) T5 (approx. 24 weeks later)	Adapted YYFS (adolescent SR) - averaged sadness/ anxiety and separate anger scales	α = .63 - .84	Adapted REQ (adolescent SR) - internal and external adaptive and maladaptive ER	- Reward of sadness/anxiety predicted functional external ER responses initially (β = 0.45**) and over time[c] (β = -0.42*) and functional internal ER responses initially (β = 0.53**), but not over time[b]. - Reward of anger predicted functional external ER

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Table 1 (*continued*)

First Author (year)	*N* (% F)	Age Range in Years (*M; SD)*	Nationality and SES	Design	Measurement			Key Findings
					PREE	R of PREE	ER	
								responses initially for boys and girls ($\beta = 0.50$**; $\beta = 0.38$*) and only for boys over time (β = -0.55*), but not girls[b] and functional internal ER responses initially (β =.33*) but not over time[b]. - Override of sadness/anxiety did not predict internal or external functional ER initially or over time for either gender[b]. - Override of anger predicted functional external ER responses initially for boys (β = 0.31*) and girls ($\beta = 0.34$*) but not over time (β = -0.39) and functional internal ER responses initially (β =.40**) and over time (β = -0.61*). - Neglect of sadness/anxiety predicted internal dysfunctional ER initially (β = 0.35*) for boys only, and not over time for either gender[b]. No association was found for external dysfunctional ER initially or over time[b]. - Neglect of anger did not predict internal or external dysfunctional ER initially or over time for either gender[b]. - Relational aggression of sadness/anxiety predicted external dysfunctional ER initially ($\beta = 0.34$**) but not over time[b]. No association was found for internal dysfunctional ER initially or over time[b]. - Relational aggression of anger predicted changes in functional external ER responses in boys over time ($\beta = 0.47$*) but not initially[b]. No association was found to predict internal or external dysfunctional ER initially or over time[b]. - Overt aggression of sadness/ anxiety predicted changes in external dysfunctional ER over time (β = -0.32*) but not initially[b]. No association was found to predict internal dysfunctional ER initially or over time[b]. - Overt aggression of anger did not predict internal or external dysfunctional ER initially or over time for either gender[b].

Note. PREE = Peer responses to adolescent emotional expressions; ER = emotion regulation; F = female; APD = Adolescent-Parent Dyads; CEMS = Children's Emotion Management Scales; EAC = Emotions as a Child Scale; YYFS = You and Your Friends Scale; ERC = Emotion Regulation Checklist; DERS = Difficulties in Emotion Regulation Scale; REQ = Regulation of Emotions Questionnaire; HRV = heart rate variability; SR = self-report; SES = Socioeconomic Status, R = Reliability, ICC = Intra Class Correlations.

α = Cronbach's Alpha reliability coefficient

aNumber of incidences reported as helpful (actually experienced), thought to help (not experienced but anticipated) or hindering (experienced and reported as unhelpful).

bBeta value not reported.

cThe term "over time" refers to participants' decline in use of the ER skill.

^studies that share the same sample size.

*p < .05. **p < .01.

Dunsmore, 2019; Simard, 2013). Several studies explored override as a standalone supportive PREE. For girls, but not boys, aged 13-15 years, override responses to negative emotions were related to better ER (Miller-Slough and Dunsmore, 2019), and override responses to anger were associated with better ER for boys and girls (aged 10 to 16 years; Hale et al., 2023) and predicted adaptive internal (i.e., self-talk) and external (i.e., seeking advice) ER for boys and girls (aged 10 to 12 years; Simard, 2013). These findings suggest overriding PREE, especially anger, might be adaptive and support development of emotion regulation by girls and boys throughout adolescence. Override as a supportive PREE seems to particularly apply to anger, because studies that looked at sadness/anxiety (Simard, 2013) or sadness only (Cui et al., 2020) did not find an association between override and ER. Perhaps expressions of anger are less socially appropriate than other emotions in adolescents and as such, overriding responses to anger might prompt adolescents to adapt their ER to be more socially appropriate. Indeed, greater adolescent inhibition of anger expression has been found to predict greater peer social acceptance (Perry-Parrish et al., 2017). But not all studies in this review found override to relate to adolescent ER. Braunstein (2016), like Miller-Slough and Dunsmore (2019), also explored override of negative emotions, but did not find an association with adolescent ER, which the former did. Perhaps Braunstein (2016) investigated a wider age range (10-15 years) than Miller-Slough and Dunsmore (2019; 13-15 years). Future research could consider narrower age-spans, consistent with research indicating that ER ability is not uniform across adolescence, nor does it develop linearly, with, a dip in ability identified around mid-adolescence (Cracco et al., 2017). Additionally, exploring the impact of PREE of discrete emotions may provide a more nuanced understanding of the impact of PREE on ER development in adolescence.

The impact of magnify PREE on ER was found to differ by adolescent gender. When peers matched boys' emotions (magnify), it predicted more adaptive ER (Miller-Slough & Dunsmore, 2019), whereas for girls the association was inverse, with greater magnification related to poorer ER over time (Cui et al., 2020). However, Borowski et al. (2018) found greater magnification related to poorer ER in both boys and girls, though limited by correlational design. While magnify PREE's can make an adolescent feel understood by their peer, if such PREE are not coupled with other supportive responses, it is possible that magnify PREE could encourage rumination, a common maladaptive ER strategy (Schäfer et al., 2016) in girls specifically (Johnson & Whisman, 2013). Therefore, the inverted predictive association between magnify and ER for boys (Miller-Slough & Dunsmore, 2019) and girls (Cui et al., 2020) may be a result of typical maladaptive ER strategy use based on gender. Future research should explore the influence of magnify PREE on adolescent ER, and the role of gender.

In summary, PREE such as override and magnify may be supportive in adolescents, even though they are seen as unsupportive in parenting literature (Morris et al., 2007). The relationship between PREE and adolescent ER depends on factors such as age, gender, friendship closeness, the PREE itself and study design. More research is needed to understand these patterns and potential moderators.

4.2. Unsupportive PREE and adolescent emotion regulation

Few studies explored comparable unsupportive PREE, with only neglect and punish explored by more than 1 study. Three studies found that neglect of anger or negative emotions more broadly did not predict ER in boys or girls (Cui et al., 2020; Hale et al., 2023; Miller-Slough & Dunsmore, 2019). In contrast, one study found that neglect of sadness/anxiety predicted greater internal dysfunctional ER (i.e., negative self-talk) for boys specifically, however, this was not the case for expressions of anger (Simard, 2013). Perhaps negative self-talk is more likely to occur when adolescents appreciate an empathic supportive response (i.e., to expressions of sadness or anxiety) and do not receive it (Seidel et al., 2010). But negative self-talk may be less likely when it is more reasonable to expect withdrawal from others (e.g., in response to anger expression; Hietanen et al., 1998; Marsh et al., 2005). Additionally, perhaps adolescent boys are more likely to experience neglect from male peers when expressing sadness or anxiety due to societal assumptions about gender norms and emotions (Chaplin, 2014). The only qualitative study found an inconsistent pattern for unsupportive PREE's (Shayanfar, 2016). That is, withdrawing responses (akin to neglect PREE) to adolescent negative emotions were perceived by some adolescents as helpful (i.e., supportive) and by others as hindering (i.e., unsupportive). Depending on the emotion, it is possible that withdrawing in response to sadness may be more hindering given an expectation of support (Seidel et al., 2010), and withdrawing responses to anger may be more helpful given many adolescents engage in "cooling off" alone to manage this emotion (Reyes et al., 2015).

Mixed results were identified for punishing PREE. Two studies found a negative relationship between punishing PREE and ER. Hale et al. (2023) found that punishing was associated with *lower* ER of anger initially (at time point 1), and Miller-Slough & Dunsmore (2019) found that punishing negatively influenced girls' ER only (over a period of 14 months) of negative emotions more broadly. This aligns with previous research in the parent literature suggesting punishing responses relate to poorer ER in adolescents (Morris et al., 2007). However, in Cui et al. (2020), where PREE was measured with an adapted version of the EAC parenting measure, punishing responses to sadness did not predict ER in girls. The YYFS is currently the most well-defined self-report measure of adolescent PREE where items are preceded by adolescent-relevant situation-based vignettes anchoring respondents to a specific emotion, increasing comparability between respondents (Primi et al., 2016). Use of the EAC over the YYFS might not adequately capture PREE and this is supported by the minimally acceptable reliability coefficient of the punish scale ($\alpha = .65$). Additionally, it is also possible that punishment of different discrete emotions has differential effects. Therefore, punishment of anger may have more significant effects on ER than punishment of sadness. However, further research on PREE of discrete emotions is required to make such claims given the different ways of operationalizing emotions across the included studies (e.g., sadness/anxiety, sadness alone, anger alone, global negative emotions). Hale et al. (2023) who measured PREE with the YYFS found that instead over a period of 4 years, punishment responses *increased* regulation of anger. Perhaps ongoing low levels of negative feedback from peers might prompt adolescents to adapt their ER over time to become more socially appropriate (Perry-Parrish et al., 2017). Therefore, depending on the intensity, if high levels of punishment are encountered it may result in increased suppression and distraction use, maladaptive ER (Miller-Slough & Dunsmore, 2016). Although if encountering low levels of punishment, it may have the inverse effect. Additionally, depending on the course of punishing responses, perhaps for a longer period (4 years, as in Hale and colleagues' (2023) study, rather than 14 months as in Miller-Slough and Dunsmore (2019) study), time may impact ER development differentially. The other unsupportive PREE (dismissive, co-rumination, relational aggression, overt aggression and aggression) were only explored by individual studies, therefore we cannot comment on any patterns across studies.

Given the few studies investigating comparable unsupportive PREE and inconsistent use of measures, more research is required. Future research should continue to explore the role of gender, employ methodologies other than self-report, and include the study of separate unsupportive PREE to both positive and negative discrete emotions as well as variations on time.

4.3. Limitations of studies included and suggestions for future research

Four issues were identified regarding the quality of included studies and were related to sample size, operationalization of and measurement of PREE/ER, and homogenous samples across the studies. Authors often neglected to describe a priori power analysis and justification for sample sizes, making it difficult to determine whether non-significant results

were due to insufficient power to detect an effect (Price et al., 2005). Future research should ensure sufficient power and report it a priori.

A key challenge for the field is how we operationalize the socializing peer. The literature suggests that an adolescent's best friend is more influential than a close friend or peers more broadly (Berndt, 2018; Cuadros & Berger, 2016). Therefore, PREE by a best friend would likely have more impact on the adolescent. Without consistent and clear definitions of "peers" in PREE, comparison of findings between studies is difficult. Future research should further explore the role of best friends.

Another issue identified was the lack of consistency in measuring PREE. This review identified that what might be considered as supportive PREE might differ from what has been identified as supportive by the parent-focused literature (Morris et al., 2007). Future research into PREE should not assume equivalence with parent emotion socialization. Therefore, the measures currently being used to index PREE, which are based on parent emotion socialization theory and research, need to be reviewed. Future research could seek to better adapt or develop new, and more valid and reliable measures of PREE given some scales had an $\alpha < .7$, which is below the generally considered benchmark. When adapting or creating new measures for modern adolescents, it is important to consider their communication context. This includes not only verbal peer responses, but also non-verbal and written communication like peer-to-peer online chatting with emoticons and GIFs, which better reflect their increased use of devices and social media for social communication (Vermeulen et al., 2018). Future research should also use complementary approaches like ecological momentary assessment and experimental methodologies (Colombo et al., 2020), and include multiple informants.

Various measures of ER were used in the studies reviewed, limiting comparability. The CEMS was the main self-report measure utilized, while others included the DERS, ERC, and REQ. While the DERS, REQ and ERC were validated for use with adolescents (Esmailian et al., 2016; Kaufman et al., 2016; Phillips & Power, 2007), the CEMS was designed for children up to age 12 years (Ogbaselase et al., 2022; Zeman et al., 2001). Future research should use adolescent-validated measures such as DERS or REQ, and include alternative ER measurements such as observational, performance-based, and psychophysiological assessment as well as multiple informants (e.g., Lougheed & Hollenstein, 2012).

Finally, the adolescent samples were fairly homogenous across studies with participants predominantly Caucasian with middle to upper socioeconomic backgrounds. Only two studies recruited ethnically diverse samples with participants of low (Cui et al., 2020) or varied socioeconomic (Simard, 2013) backgrounds. Further, it is important to acknowledge that three of the included studies used the same sample (Borowski et al., 2018; Braunstein, 2016; Hale et al., 2023). This further increases the homogeneity of samples making the findings less generalisable. Although the studies differed in methods and analyses, they surveyed the same participants, which may compromise the reliability of the results as representative of the adolescent population. Future studies should recruit more diverse samples to better understand the nuances, as current research focuses too heavily on Western samples.

4.4. Limitations of the current review and processes

Although this review was comprehensive it had some limitations. We only searched for English language studies which might have led to excluding more culturally varied populations, reducing generalizability. However, since the preeminent measure of PREE is only available in English, it is unlikely that non-English language studies were missed. This review focused on one aspect of emotion socialization (i.e., PREE) only. Other forms of emotion socialization, such as modelling and emotion discussion, which were outside the scope of this review, warrant further investigation. Finally, we identified only eight studies for inclusion, limiting reliability and generalizability. Nevertheless, the emerging patterns and limitations identified by this review provide guidance for ongoing research in this emerging and important area.

5. Conclusion

This systematic review shows emerging evidence of an association between both supportive and, to a lesser degree, unsupportive PREE and adolescent ER, depending on various factors such as PREE, gender, and friendship closeness. Future research should consider these nuances and potential moderators to inform developmentally appropriate preventative interventions that target adolescent ER, which is known to play an important role in mental health.

Data Availability Statement

Not applicable given the submission takes the format of a systematic review.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethics Approval

Ethics approval was not applicable due to the paper being a systematic review.

Declaration of Competing Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no financial support for this work that could have influenced its outcome.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

We understand that the Corresponding Author is the sole contact for the Editorial process (including Editorial Manager and direct communications with the office). She is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs. We confirm that we have provided a current, correct email address which is accessible by the Corresponding Author and which has been configured to accept email from elizabeth.pizarro@acu.edu.au

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.mhp.2023.200299.

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