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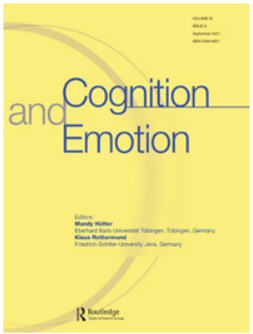

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Identifying the determinants of emotion regulation choice: a systematic review with meta-analysis

Meghann Matthews [a], Thomas L. Webb [a], Roni Shafir[b], Miranda Snow [c] and Gal Sheppes[b]

[a]Department of Psychology, The University of Sheffield, Sheffield, UK; [b]School of Psychological Sciences, Tel Aviv University, Tel Aviv, Israel; [c]Department of Psychiatry, University of Vermont, Burlington, VT, USA

ABSTRACT

Day-to-day life is inundated with attempts to control emotions and a wealth of research has examined what strategies people use and how effective these strategies are. However, until more recently, research has often neglected more basic questions such as whether and how people choose to regulate their emotions (i.e. emotion regulation choice). In an effort to identify what we know and what we need to know, we systematically reviewed studies that examined potential determinants of whether and how people choose to regulate their emotions. Eighteen determinants were identified across 219 studies and were categorised as being affective, cognitive, motivational, individual or social-cultural in nature. Where there were sufficient primary studies, meta-analysis was used to quantify the size of the associations between potential determinants and measures of whether and how people choose to regulate their emotions. Based on the findings, we propose that people's decisions about whether and how to regulate their emotions are determined by factors relating to the individual doing the regulating, the emotion that is being regulated, and both the immediate situation and the broader social context in which the regulation is taking place.

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Day-to-day life is filled with events that make us emotional, and people often try to regulate or control these emotions using a range of strategies (e.g. Koole, 2009; Parkinson & Totterdell, 1999). However, before a strategy can be implemented, the person needs to decide whether to regulate their emotions, and if so, what strategy they will use to do so. But what influences these decisions? For example, what influences whether an anxious interviewee decides that they need to get their nerves under control? If they decide to try to control their nerves, would they choose to try to distract themselves and think about what they will cook for dinner or choose to reappraise their nerves as providing an opportunity to perform better during the interview? The present research reviews and organises the empirical evidence to date in an attempt to answer these important questions and identify what determines whether and how people choose to regulate their emotions. We identify and discuss affective, cognitive, motivational, individual, and social-cultural determinants of both intentions to regulate emotional responses and emotion regulation choice.

Emotion regulation is a multi-stage process (e.g. Bonanno & Burton, 2013; Gross, 2015; Webb, Schweiger Gallo, et al., 2012). For example, according to the action control perspective (Webb, Schweiger Gallo, et al., 2012), emotion regulation comprises three stages – (i) identification (of the need to regulate), (ii) selection (of whether to regulate and of an appropriate strategy to do so), and (iii) implementation (of the selected strategy). During the first – identification

CONTACT Meghann Matthews meghann.matthews@sheffield.ac.uk Department of Psychology, The University of Sheffield, Cathedral Court, 1 Vicar Lane, Sheffield S1 2LT, UK

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– stage, the person identifies whether they need to regulate their emotions. The identification stage does not involve a choice, rather it reflects whether there is a potential need to regulate emotions that the person could then choose whether or not to address. The need to regulate will be identified if a discrepancy exists between the current and the desired emotional state. For example, an interviewee may want to remain calm, but feel themselves starting to become anxious while waiting for the interview. If a discrepancy is detected, then the individual decides (i) whether they want and/or are able to regulate and, if so, (ii) how to regulate from the regulatory strategies that are known and available to them (the selection stage). Finally, during the implementation stage, the person attempts to put the strategy that they have selected into action. Other models (e.g. Gross, 2015) suggest a fourth stage – monitoring – in which the person monitors the outcome of their regulation and then decides whether to (i) continue using the current strategy, (ii) switch to another strategy, or (iii) to stop regulation.

Research into the selection and monitoring stages of emotion regulation has increased over recent years, with a number of studies examining how people choose to regulate their emotions from the different strategies available to them. However, as previously outlined, the selection stage involves not only the decision of which strategy to use but also whether to regulate (Webb, Schweiger Gallo, et al., 2012). As emotion regulation is a goal-directed and motivated process (Tamir et al., 2020), the decision of whether to regulate represents the goal or intention (where intentions reflect self-instructions to perform particular behaviours or to obtain certain outcomes, Triandis, 1980), while the term "emotion regulation choice" has typically been used to refer to decisions about how to regulate (e.g. Sheppes, 2020; Sheppes et al., 2011, 2014)[1] and therefore represents the means by which the person decides to strive for that goal or achieve the intended outcome (cf. goal systems theory, Kruglanski et al., 2015). In addition to choosing between regulation strategies, people may also choose how to use a particular strategy. For example, having decided to reappraise people may need to choose which specific reappraisal tactic to use, such as whether to reappraise by trying to accept that nothing could be done or trying to tell themselves that things will turn out better than expected (e.g. Vishkin et al., 2020). Consequently, emotion regulation choice can reflect choices between and within regulation strategies. Furthermore, as monitoring the outcomes of regulation (e.g. whether the chosen strategy is having the desired effect) can restart the cycle of emotion regulation (e.g. prompt people to consider whether to continue regulating and, if so, how), studies which examine the monitoring stage of emotion regulation (e.g. Dorman-Ilan et al., 2020) can also help us to understand whether and how people choose to regulate their emotions.

The present research

Despite the importance of understanding whether and how people choose to regulate their emotions (for a review, see Sheppes, 2020), it is currently unclear what influences the various decisions. For example, when do people choose to savour good news versus return to the task at hand? If they do decide to change how they feel, how do they choose between different regulatory strategies? In an effort to answer these questions, the present review aimed to (i) identify and organise the potential determinants of (a) intentions to regulate and (b) emotion regulation choice, and (ii) estimate the strength of the relationships between these potential determinants and intentions to regulate and emotion regulation choice. To do so, we systematically reviewed the evidence on the potential determinants of these regulatory decisions in adult samples.

Potential determinants in the existing empirical evidence were identified using a bottom-up approach, and were then organised through a top-down approach using an extended version of Sheppes et al. (2014) conceptual framework. Where there were sufficient studies ($k \geq 5$), meta-analysis was used to quantify the size of the relationships between the potential determinants and the various measures of intentions to regulate and emotion regulation choice that have been used in empirical studies to date.

Method

Information sources and search strategy

Three methods were used to identify studies that could help to understand emotion regulation choice. First, we searched Web of Science, Scopus, and PsycInfo using combinations of the search terms emotion / affect / regulation / control / self-

regulation AND choice / action control / process model. The searches were conducted in August 2020 and the same terms were also entered into ProQuest to identify unpublished studies. Second, we inspected the reference lists of the articles selected for inclusion from the database searches for additional studies that may be suitable (i.e. an ancestry approach). Third, we examined papers that had cited the articles included (as identified through Publish or Perish software; Harzing, 2007).

Eligibility criteria

To be included in the review, the studies had to manipulate and/or measure a factor that may influence (i) intentions to regulate emotions or (ii) which emotion regulation strategy (or strategies) people select in a situation. Studies which measured the frequency with which people use – rather than choose – a regulatory strategy, what strategies they typically use, or what strategies they have used to regulate their emotions in a particular situation, were excluded as it cannot be determined whether the *use* of a strategy reflected a conscious, active choice, rather than a more automatic response (Sheppes, 2020).[2] In addition, to ensure that responses reflected intentions to regulate emotions, if participants were not explicitly asked to choose whether and/or how to regulate their emotions, then it had to be clear that the procedure was *more likely than not* to make an emotion salient that required regulation. For example, numerous studies have asked participants to choose between different stimuli (e.g. music or film clips) following either a mood induction (e.g. Taylor & Friedman, 2015) or their current mood being made salient (e.g. Bolt, 2016). Although these studies did not explicitly make participants aware that the choices that they were being asked to make were intended to regulate their emotions we could be confident that the participant's choices likely reflected efforts to regulate those emotions, as the choice immediately followed a procedure that rendered their emotions salient.[3]

Finally, the study had to focus on how the participants chose to regulate their own emotions (i.e. *intra*personal emotion regulation choice) as opposed to how they would choose to help someone else to regulate their emotions (i.e. *inter*personal emotion regulation choice). To be included in the meta-analysis, the authors needed to report or provide sufficient information for effect size *r* to be calculated. We did not place any restrictions on the design of the study and we considered studies with both correlational and experimental designs for inclusion. Due to clear evidence that there are developmental changes in emotion regulation (e.g. Zimmermann & Iwanski, 2014), the only restriction was that the sample comprised adults, defined as those aged over 18.

Study selection

Studies were selected via a two-step process. The first step involved screening the titles and abstracts of the articles identified during the search to identify potentially relevant studies. The second step involved reviewing the full-texts of potentially relevant articles against the eligibility criteria. Two of the authors independently assessed whether the studies were eligible for inclusion. There was good agreement between the two raters, $\kappa = .70$, 95% CI [.62, .79], $p < .001$, and disagreements were resolved by discussion. In total, 219 studies were deemed suitable for inclusion. The flow of studies through each phase of the review is presented in Figure 1 and Table 1 provides an overview of their key characteristics.

Data extraction

We started by coding how intentions to regulate and emotion regulation choice were measured in each of the primary studies. Participants' intentions to regulate their emotions were typically measured by assessing participants' motivation to repair their mood (e.g. Wood et al., 2009) or by giving participants the choice between passively viewing stimuli or engaging with a regulatory strategy (e.g. Benita et al., 2019; Mehta et al., 2017). As people choose how to regulate their emotions both between and within different strategies, emotion regulation choice was typically measured in one of four ways: (i) measures in which participants chose between various strategies made available to them to regulate their emotions (e.g. between distraction and reappraisal, Sheppes et al., 2011); (ii) measures in which participants explicitly chose between stimuli likely to induce different emotions (e.g. video clips, newspaper articles, video games, Kappes & Schikowski, 2013); (iii) measures that reflect the amount of time that participants spent viewing various stimuli (e.g. images or video clips of varying valence, Sands et al., 2016) in an effort to regulate their emotions; and (iv) measures in which participants rated which stimuli (e.g. video

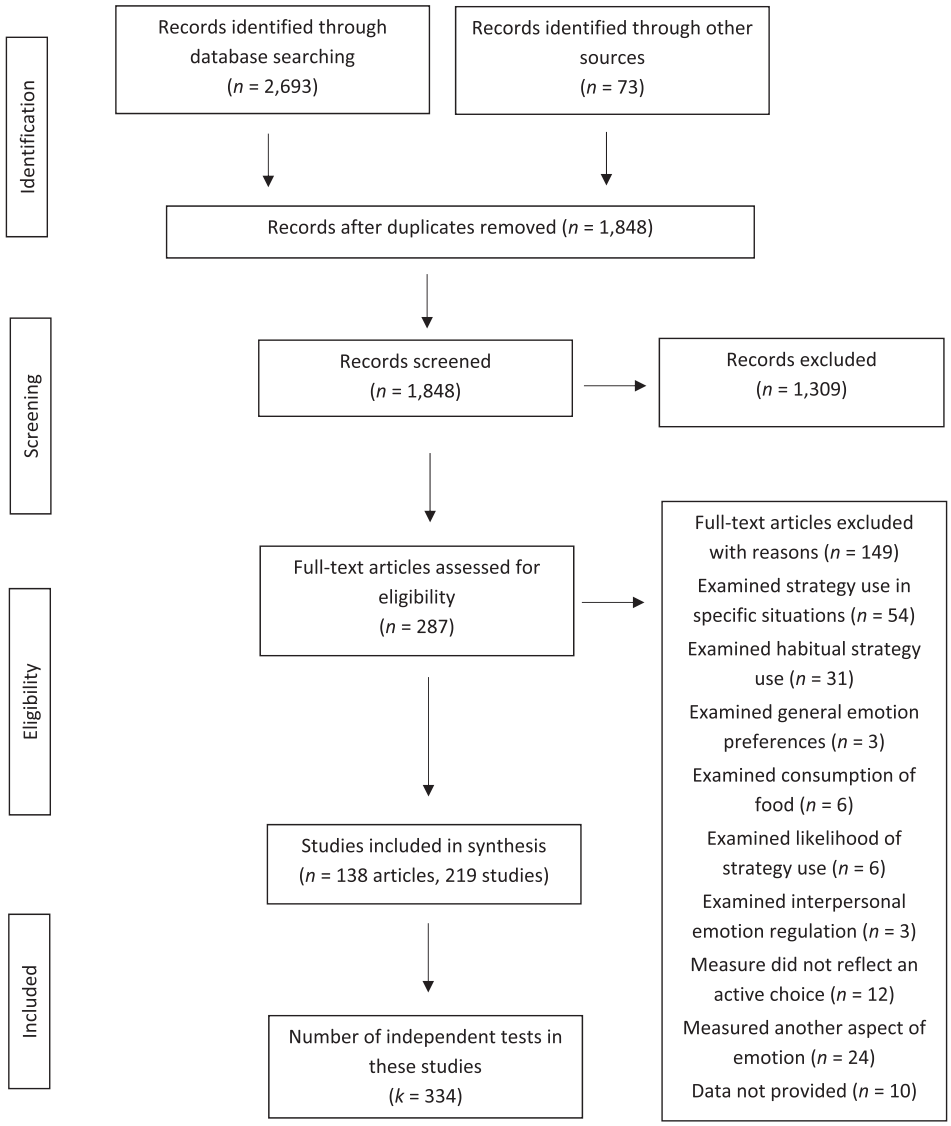

Figure 1. Flow of information through each stage of the review.

games) they would prefer to engage with or which specific emotions they would ideally experience in a particular situation (e.g. Tamir, 2005; Tsai et al., 2007). The first measure of emotion regulation choice reflects how people choose to regulate their emotions *between* different strategies, whereas the other measures reflect choices *within* a regulation strategy. For example, measuring the type of stimuli that participants choose – or prefer – to engage with reflects how people choose to implement situation selection, and measuring the amount of time that participants choose to spend viewing various stimuli reflects how people choose to modify the situation so as to regulate their emotions.

We also coded the nature of the potential determinant of emotion regulation choiceexamined in each of the primary studies using an extended version of Sheppes et al. (2014) conceptual framework. Specifically, we categorised the potential determinants as either affective (i.e. relating to the emotion being regulated), cognitive (i.e. relating to cognitive aspects associated with regulating emotions), or motivational (i.e. relating to the reasons people regulate their emotions). We also extended this framework to

Table 1. Overview of the key characteristics of studies included in the review.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Aharon (2018)	1	Intensity of the emotion	Affective	ERC 2	0.39	44
Aharon (2018)	1	Mental health	Individual	ERC 2	0.34	44
Alkoby et al. (2019)	1	Intensity of the emotion	Affective	ERC 2	0.73	85
Alkoby et al. (2019)	1	Mindfulness training programme	Individual	ERC 2	0.06	85
Alkoby et al. (2019)	1	Nature of emotional event	Affective	ERC 2	0.07	85
Arens & Stangier (2020)	1	Mental health	Individual	ERC 3	0.37	100
Arens & Stangier (2020)	1	Personal preference for emotions	Individual	ERC 3	0.27	102
Arens & Stangier (2020)	1	Valence of the focal emotion	Affective	ERC 3	0.20	101
Bae et al. (2016)	2	Level of arousal	Affective	ERC 1	0.43	56
Bae et al. (2019)	2	Level of arousal	Affective	ERC 3	0.80	97
Bailey (2017)	1	Valence of the focal emotion	Affective	ERC 5	0.13	531
Bailey & Ivory. (2018)	1	Valence of the focal emotion	Affective	ERC 3	0.18	126
Bench & Lench (2019)	1	Level of arousal	Affective	ERC 3	0.09	51
Bench & Lench (2019)	2	Desire for novelty	Individual	ERC 3	0.21	150
Bench & Lench (2019)	2	Level of arousal	Affective	ERC 3	0.09	150
Bench & Lench (2019)	3	Valence of the focal emotion	Affective	ERC 3	0.21	140
Benita et al. (2019)	4	Autonomy supportive vs. controlling context	Social-Cultural	ERC 1	0.22	88
Birk & Bonanno (2016)	1	Intensity of the emotion	Affective	ERC 2	0.71	90
Birk & Bonanno (2016)	1	Level of arousal	Affective	ERC 2	0.84	90
Birk & Bonanno (2016)	1	Valence of the focal emotion	Affective	ERC 2	0.84	77
Birk & Bonanno (2016)	2	Intensity of the emotion	Affective	ERC 2	0.12	95
Birk & Bonanno (2016)	2	Level of arousal	Affective	ERC 2	0.12	95
Birk & Bonanno (2016)	2	Valence of the focal emotion	Affective	ERC 2	0.07	92
Biswas et al. (1994)	1	Gender	Individual	ERC 3	0.31	64
Bolt (2016)	1	Anticipation of an upcoming task	Motivational	ERC 3	0.15	310
Bolt (2016)	1	Reasons for listening to music	Individual	ERC 3	0.08	310
Bolt (2016)	1	Valence of the focal emotion	Affective	ERC 3	0.15	310
Bowman & Tamborini (2015)	1	Level of arousal	Affective	ERC 3	0.78	64
Bresin & Robinson (2015)	1	Agreeableness	Individual	ERC 4	0.09	77
Bresin & Robinson (2015)	1	Gender	Individual	ERC 4	0.10	77
Bresin & Robinson (2015)	1	Valence of the focal emotion	Affective	ERC 4	0.08	77
Bresin & Robinson (2015)	2	Agreeableness	Individual	ERC 4	0.10	120
Bresin & Robinson (2015)	2	Gender	Individual	ERC 4	0.07	120
Bresin & Robinson (2015)	2	Valence of the focal emotion	Affective	ERC 4	0.08	120
Bryant & Zillmann (1984)	1	Level of arousal	Affective	ERC 4	0.51	120
Campbell (2020)	1	Sleep deprivation	Individual	ERC 3	0.11	52
Charles et al. (2003)	2	Age	Individual	ERC 4	0.24	64
Charles et al. (2003)	2	Valence of the focal emotion	Affective	ERC 4	0.61	64
Chen et al. (2007)	1	Ruminative tendencies	Individual	ERC 4	0.35	252
Chen et al. (2007)	1	Valence of the focal emotion	Affective	ERC 4	0.20	252
Christ & Medoff (2009)	1	Valence of the focal emotion	Affective	ERC 4	0.32	84
Cohen & Andrade (2004)	1	Anticipation of an upcoming task	Motivational	ERC 3	0.21	117
Cohen & Andrade (2004)	2	Anticipation of an upcoming task	Motivational	ERC 3	0.23	129
Cohen & Andrade (2004)	4	Anticipation of an upcoming task	Motivational	ERC 3	0.16	126
Cohrdes et al. (2017)	2	Age	Individual	ERC 4	0.11	222
Cohrdes et al. (2017)	2	Valence of the focal emotion	Affective	ERC 4	0.06	222
Cohrdes et al. (2017)	3	Age	Individual	ERC 4	0.26	149
Cohrdes et al. (2017)	3	Anticipation of an upcoming task	Motivational	ERC 4	0.14	149
Coleman & Williams (2013)	2	Social identity	Individual	ERC 3	0.30	103
Cortes et al. (2019)	2	Agreeableness	Individual	ERC 1	0.24	92
Cortes et al. (2019)	2	Self-esteem	Individual	ERC 1	0.08	92
de los Santos & Nabi (2019)	1	Specific emotions	Affective	ERC 3	0.43	452
DeMarco & Friedman (2018)	1	Nature of emotional event	Affective	ERC 3	0.27	179
DeMarco et al. (2015)	1	Intensity of the emotion	Affective	ERC 3	0.33	174
DeMarco et al. (2015)	1	Nature of emotional event	Affective	ERC 3	0.27	174
DeMarco et al. (2015)	2	Nature of emotional event	Affective	ERC 3	0.26	68
Dorman-Ilan et al. (2020)	1	Intensity of the emotion	Affective	ERC 2	0.59	28
Doukas et al. (2020)	1	Level of arousal	Affective	ERC 2	0.08	60
Drolet et al. (2011)	1	Age	Individual	ERC 5	0.23	91
Erber et al. (1996)	1	Anticipation of an upcoming task	Motivational	ERC 5	0.35	64
Erber et al. (1996)	1	Gender	Individual	ERC 5	0.23	64

(*Continued*)

Table 1. Continued.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Erber et al. (1996)	1	Valence of the focal emotion	Affective	ERC 5	0.05	64
Erber et al. (1996)	2	Anticipation of an upcoming task	Motivational	ERC 5	0.27	72
Erber et al. (1996)	2	Gender	Individual	ERC 5	0.33	72
Erber et al. (1996)	2	Valence of the focal emotion	Affective	ERC 5	0.36	72
Erber et al. (1996)	3	Anticipation of an upcoming task	Motivational	ERC 4	0.38	60
Feldman & Freitas (2019)	1	Intensity (of previous trial)	Social-Cultural	ERC 2	0.32	48
Feldman & Freitas (2019)	1	Intensity of the emotion	Affective	ERC 2	0.34	48
Feldman & Freitas (2019)	2	Intensity (of previous trial)	Social-Cultural	ERC 2	0.18	63
Feldman & Freitas (2019)	2	Intensity of the emotion	Affective	ERC 2	0.18	63
Fenigstein (1979)	1	Gender	Individual	ERC 3	0.34	87
Fenigstein (1979)	2	Valence of the focal emotion	Affective	ERC 3	0.25	64
Floerke et al. (2017)	1	Affective forecasting ability	Individual	ERC 3	0.15	53
Floerke et al. (2017)	1	Valence of the focal emotion	Affective	ERC 3	0.04	53
Floerke et al. (2017)	2	Affective forecasting ability	Individual	ERC 3	0.16	104
Floerke et al. (2017)	2	Age	Individual	ERC 3	0.08	95
Floerke et al. (2017)	2	Valence of the focal emotion	Affective	ERC 3	0.45	95
Friedman et al. (2012)	1	Valence of the focal emotion	Affective	ERC 3	0.37	129
Friedman et al. (2012)	2	Valence of the focal emotion	Affective	ERC 5	0.34	35
Friedman et al. (2012)	3	Valence of the focal emotion	Affective	ERC 5	0.44	93
Gendolla (2012)	1	Valence of the focal emotion	Affective	ERC 3	0.45	32
Gessner (2015)	1	Intensity of the emotion	Affective	ERC 2	0.81	92
Grant (2018)	1	Valence of the focal emotion	Affective	ERC 3	0.03	301
Greenwood (2010)	1	Gender	Individual	ERC 5	0.14	140
Greenwood (2010)	1	Valence of the focal emotion	Affective	ERC 3	0.31	140
Greenwood (2010)	1	Valence of the focal emotion	Affective	ERC 5	0.16	140
Hackenbracht & Tamir (2010)	1	Goal (of upcoming task)	Motivational	ERC 5	0.65	76
Hackenbracht & Tamir (2010)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.24	76
Hackenbracht & Tamir (2010)	2	Goal (of upcoming task)	Motivational	ERC 5	0.31	57
Hannan & Orcutt (2020)	1	Intensity of the emotion	Affective	ERC 2	0.62	83
Hannan & Orcutt (2020)	1	Mental health	Individual	ERC 2	0.20	83
Harmon-Jones et al. (2011)	2	Attitudes towards emotions	Individual	ERC 5	0.28	202
Harmon-Jones et al. (2011)	5	Attitudes towards emotions	Individual	ERC 5	0.36	97
Harmon-Jones et al. (2018)	1	Specific emotions	Affective	ERC 5	0.22	155
Harmon-Jones et al. (2018)	2	Specific emotions	Affective	ERC 5	0.20	251
Hay et al. (2015)	1	Intensity of the emotion	Affective	ERC 2	0.66	51
Hay et al. (2015)	1	Mental health	Individual	ERC 2	0.04	51
Hay et al. (2015)	1	Valence of the focal emotion	Affective	ERC 2	0.18	51
Heimpel et al. (2002)	3	Self-esteem	Individual	ERC 3	0.25	116
Hershfield & Alter (2019)	3a	Valence of the focal emotion	Affective	ERC 3	0.14	294
Hershfield & Alter (2019)	3b	Valence of the focal emotion	Affective	ERC 5	0.18	127
Hu et al. (2020)	1	Valence of the focal emotion	Affective	ERC 5	0.58	95
Hu et al. (2020)	2	Valence of the focal emotion	Affective	ERC 5	0.27	155
Isaacowitz et al. (2015)	1	Age	Individual	ERC 4	0.11	69
Isaacowitz et al. (2015)	1	Valence of the focal emotion	Affective	ERC 4	0.32	69
Isaacowitz et al. (2015)	2	Age	Individual	ERC 4	0.03	62
Isaacowitz et al. (2015)	2	Valence of the focal emotion	Affective	ERC 4	0.47	62
Isaacowitz et al. (2018)	1	Goal (regulate vs. view)	Motivational	ERC 3	0.12	150
Isaacowitz et al. (2018)	1	Valence of the focal emotion	Affective	ERC 3	0.37	150
Johnson & Knobloch-Westerwick (2014)	1	Valence of the focal emotion	Affective	ERC 4	0.17	168
Johnson & Knobloch-Westerwick (2017)	1	Valence of the focal emotion	Affective	ERC 4	0.14	174
Johnson & Knobloch-Westerwick (2017)	2	Group identification	Individual	ERC 4	0.08	152
Johnson & Knobloch-Westerwick (2017)	2	Valence of the focal emotion	Affective	ERC 4	0.10	152
Josephson et al. (1996)	1	Valence of the focal emotion	Affective	ERC 3	0.27	106
Kappes & Schikowski (2013)	1	Control beliefs	Individual	ERC 3	0.21	84
Kemp & Kopp (2011)	1	Valence of the focal emotion	Affective	ERC 5	0.36	96
Kim (2013)	1	Gender	Individual	ERC 3	0.24	226

(*Continued*)

Table 1. Continued.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Kim (2013)	1	Valence of the focal emotion	Affective	ERC 3	0.15	226
Kim &Oliver (2011)	1	Gender	Individual	ERC 5	0.05	152
Kim & Oliver (2011)	1	Valence of the focal emotion	Affective	ERC 5	0.09	152
Knobloch (2003)	1	Valence of the focal emotion	Affective	ERC 4	0.23	64
Knobloch & Zillmann (2002)	1	Valence of the focal emotion	Affective	ERC 4	0.21	116
Knobloch-Westerwick (2007)	1	Gender	Individual	ERC 3	0.14	79
Knobloch-Westerwick & Alter (2006)	1	Gender	Individual	ERC 4	0.24	86
Livingstone & Isaacowitz (2015)	1	Age	Individual	ERC 4	0.07	146
Livingstone & Isaacowitz (2015)	1	Goal (to view the image or regulate)	Motivational	ERC 4	0.14	146
Livingstone & Isaacowitz (2015)	1	Valence of the focal emotion	Affective	ERC 4	0.32	146
Livingstone & Isaacowitz (2018)	1	Age	Individual	ERC 4	0.24	181
Livingstone & Isaacowitz (2019)	1	Age	Individual	ERC 3	0.15	225
Livingstone & Isaacowitz (2019)	1	Level of arousal	Affective	ERC 3	0.16	227
Livingstone & Isaacowitz (2019)	1	Valence of the focal emotion	Affective	ERC 3	0.44	226
López López & Ruiz de Maya (2012)	1	Valence of the focal emotion	Affective	ERC 5	0.07	147
López López & Ruiz de Maya (2012)	2	Valence of the focal emotion	Affective	ERC 5	0.13	160
Luzon (2018)	1	Intensity of the emotion	Affective	ERC 2	0.32	40
Luzon (2018)	1	Valence of the focal emotion	Affective	ERC 2	0.27	40
Ma et al. (2018)	3	Culture	Social-Cultural	ERC 1	0.32	110
Ma et al. (2018)	3	Upcoming task	Motivational	ERC 1	0.17	110
Ma et al. (2018)	4	Culture	Social-Cultural	ERC 1	0.21	143
Ma et al. (2018)	4	Upcoming task	Motivational	ERC 1	0.26	143
Markovitch et al. (2016)	1	Attitudes towards emotions	Individual	ERC 3	0.27	59
Markovitch et al. (2017)	1	Attitudes towards emotions	Individual	ERC 3	0.38	68
Markovitch et al. (2017)	2	Attitudes towards emotions	Individual	ERC 3	0.28	66
Markovitch et al. (2017)	3	Attitudes towards emotions	Individual	ERC 3	0.56	45
Martins et al. (2018)	1	Age	Individual	ERC 2	0.28	80
Martins et al. (2018)	1	Intensity of the emotion	Affective	ERC 2	0.71	80
Martins et al. (2018)	1	Valence of the focal emotion	Affective	ERC 2	0.65	80
Mastro et al. (2002)	1	Level of arousal	Affective	ERC 3	0.20	84
Matthews et al. (in press)	1	Intensity of the emotion	Affective	ERC 2	0.76	37
Matthews et al. (in press)	2	Intensity of the emotion	Affective	ERC 2	0.77	50
Mehta et al. (2017)	1	Intensity of the emotion	Affective	ERC 2	0.44	28
Mehta et al. (2017)	3	Culture	Social-Cultural	ERC 1	0.07	81
Mehta et al. (2017)	3	Culture	Social-Cultural	ERC 2	0.19	81
Mehta et al. (2017)	3	Intensity of the emotion	Affective	ERC 1	0.58	81
Mehta et al. (2017)	3	Intensity of the emotion	Affective	ERC 2	0.40	81
Mehta et al. (2017)	2a	Intensity of the emotion	Affective	ERC 1	0.67	38
Mehta et al. (2017)	2a	Intensity of the emotion	Affective	ERC 2	0.31	38
Mehta et al. (2017)	2b	Intensity of the emotion	Affective	ERC 1	0.55	14
Mehta et al. (2017)	2b	Intensity of the emotion	Affective	ERC 2	0.25	14
Millgram et al. (2015)	1	Mental health	Individual	ERC 3	0.24	61
Millgram et al. (2015)	2	Mental health	Individual	ERC 3	0.35	65
Millgram et al. (2015)	3	Mental health	Individual	ERC 5	0.25	61
Millgram, Joormann, et al. (2019)	1	Mental health	Individual	ERC 5	0.31	102
Millgram, Joormann, et al. (2019)	1	Motivation to experience happiness	Individual	ERC5	0.28	103

(*Continued*)

Table 1. Continued.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Millgram, Joormann, et al. (2019)	1	Valence of the focal emotion	Affective	ERC 5	0.26	102
Millgram, Sheppes, et al. (2019)	2	Goal (Decrease/increase emotion)	Motivational	ERC 2	0.85	37
Millgram, Sheppes, et al. (2019)	3	Goal (Decrease/increase emotion)	Motivational	ERC 2	0.82	30
Millgram, Sheppes, et al. (2019)	3	Valence of the focal emotion	Affective	ERC 2	0.03	30
Millgram, Sheppes, et al. (2019)	5	Goal (Decrease/increase emotion)	Motivational	ERC 2	0.86	58
Millgram, Sheppes, et al. (2019)	5	Mental health	Individual	ERC 2	0.17	58
Milyavsky et al. (2019)	1	Effort	Cognitive	ERC 1	0.21	40
Milyavsky et al. (2019)	1	Intensity of the emotion	Affective	ERC 1	0.20	40
Milyavsky et al. (2019)	2	Effort	Cognitive	ERC 1	0.81	89
Milyavsky et al. (2019)	2	Intensity of the emotion	Affective	ERC 1	0.48	89
Milyavsky et al. (2019)	3	Effort	Cognitive	ERC 1	0.32	128
Milyavsky et al. (2019)	3	Intensity of the emotion	Affective	ERC 1	0.27	128
Murphy & Young (2018)	1	Intensity of the emotion	Affective	ERC 2	0.33	52
Murphy & Young (2018)	1	Previous choice, previous affect	Individual	ERC 2	0.16	52
Murphy & Young (2020)	1	Intensity of the emotion	Affective	ERC 2	0.14	68
Oliver (2008)	2	Valence of the focal emotion	Affective	ERC 5	0.34	124
Oliver (2008)	3	Valence of the focal emotion	Affective	ERC 5	0.35	96
Orejuela-Dávila et al. (2019)	1	Intensity of the emotion	Affective	ERC 2	0.82	109
Orejuela-Dávila et al. (2019)	1	Post-traumatic growth	Individual	ERC 2	0.24	109
Ossenfort & Isaacowitz (2018)	1	Age	Individual	ERC 3	0.31	61
Ossenfort & Isaacowitz (2018)	1	Age	Individual	ERC 4	0.19	61
Ossenfort et al. (2020)	1	Age	Individual	ERC 3	0.11	111
Ozkaya (2014)	1	Gender	Individual	ERC 3	0.14	144
Ozkaya (2014)	1	TV viewing habits	Individual	ERC 3	0.22	83
Ozkaya (2014)	1	Emotion regulation: depleted, non-depleted	Individual	ERC 3	0.16	83
Park (2018)	1	Intensity of the emotion	Affective	ERC 2	0.64	128
Petersen (2012)	1	Valence of the focal emotion	Affective	ERC 5	0.30	80
Petersen (2012)	2	Valence of the focal emotion	Affective	ERC 5	0.35	61
Pletzer et al. (2015)	1	Intensity of the emotion	Affective	ERC 2	0.51	39
Pletzer et al. (2015)	1	Occupation	Individual	ERC 2	0.08	39
Pliskin et al. (2018)	2	Intensity of the emotion	Affective	ERC 2	0.33	101
Porat, Halperin, & Tamir (2016)	A2	Political ideology	Social-Cultural	ERC 5	0.19	114
Porat, Halperin, & Tamir (2016)	A4	Political ideology	Social-Cultural	ERC 5	0.23	155
Porat, Halperin, & Tamir (2016)	B4	Perceived utility of emotion(s)	Individual	ERC 5	0.11	70
Porat, Halperin, Mannheim, et al. (2016)	2	Need to belong	Social-Cultural	ERC 5	0.35	55
Porat, Halperin, Mannheim, et al. (2016)	3	Need to belong	Social-Cultural	ERC 5	0.25	109
Porat, Halperin, Mannheim, et al. (2016)	1a	Need to belong	Social-Cultural	ERC 5	0.34	94
Porat, Halperin, Mannheim, et al. (2016)	1a	Perceived utility of emotion(s)	Individual	ERC 5	0.58	94
Porat, Halperin, Mannheim, et al. (2016)	1b	Need to belong	Social-Cultural	ERC 5	0.22	237
Porat, Halperin, Mannheim, et al. (2016)	1b	Perceived utility of emotion(s)	Individual	ERC 5	0.46	237
Porat et al. (2018)	1	Political ideology	Social-Cultural	ERC 3	0.29	118
Reinecke et al. (2012)	1	Valence of the focal emotional	Affective	ERC 3	0.25	111
Rovenpor & Isbell (2018)	3	Control beliefs	Individual	ERC 3	0.31	293
Rovenpor & Isbell (2018)	4	Control beliefs	Individual	ERC 3	0.31	416
Rovenpor et al. (2013)	1	Age	Individual	ERC 3	0.07	67
Rovenpor et al. (2013)	1	Age	Individual	ERC 4	0.17	67

(*Continued*)

Table 1. Continued.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Rovenpor et al. (2013)	1	Valence of the focal emotion	Affective	ERC 3	0.69	67
Rovenpor et al. (2013)	1	Valence of the focal emotion	Affective	ERC 4	0.80	67
Sai et al. (2020)	1	Intensity of the emotion	Affective	ERC 2	0.72	31
Sai et al. (2020)	2	Intensity of the emotion	Affective	ERC 2	0.50	30
Sai et al. (2020)	3	Intensity of the emotion	Affective	ERC 2	0.75	30
Sands (2017)	2	Age	Individual	ERC 3	0.26	245
Sands & Isaacowitz (2017)	1	Age	Individual	ERC 3	0.42	59
Sands & Isaacowitz (2017)	1	Level of arousal	Affective	ERC 3	0.81	59
Sands & Isaacowitz (2017)	1	Valence of the focal emotion	Affective	ERC 3	0.42	59
Sands et al. (2016)	1	Age	Individual	ERC 4	0.27	60
Sands et al. (2016)	1	Level of arousal	Affective	ERC 4	0.09	60
Sands et al. (2016)	1	Valence of the focal emotion	Affective	ERC 4	0.28	60
Sauer et al. (2016)	1	Intensity of the emotion	Affective	ERC 2	0.85	75
Sauer et al. (2016)	1	Mental health	Individual	ERC 2	0.05	75
Sauer et al. (2016)	1	Nature of emotional event	Affective	ERC 2	0	75
Scheibe et al. (2015)	1	Age	Individual	ERC 2	0.37	77
Scheibe et al. (2015)	1	Intensity of the emotion	Affective	ERC 2	0.72	77
Scheibe et al. (2015)	1	Level of executive control	Individual	ERC 2	0.33	77
Schwartz et al. (2018)	1	Goal	Motivational	ERC 5	0.62	102
Schwartz et al. (2018)	1	Level of construal	Cognitive	ERC 5	0.19	102
Schwartz et al. (2018)	2	Level of construal	Cognitive	ERC 5	0.02	126
Schwartz et al. (2018)	2	Perceived utility of emotion(s)	Individual	ERC 5	0.89	126
Schwartz et al. (2018)	3	Level of construal	Cognitive	ERC 5	0.36	88
Schwartz et al. (2018)	3	Perceived utility of emotion(s)	Individual	ERC 5	0.70	88
Shafir et al. (2015)	1	Intensity of the emotion	Affective	ERC 2	0.56	27
Shafir, Guarino, et al. (2016)	1	Self-esteem	Individual	ERC 2	0.08	41
Shafir, Thiruchselvam, et al. (2016)	1	Intensity of the emotion	Affective	ERC 2	0.46	24
Shafir et al. (2018)	1	Intensity of the emotion	Affective	ERC 2	0.32	29
Shafir et al. (2020)	1	Intensity of the emotion	Affective	ERC 2	0.86	37
Shafir et al. (2020)	1	Intensity of the emotion	Affective	ERC 2	0.82	43
Shen et al. (2020)	1	Valence of the focal emotion	Affective	ERC 5	0.11	180
Shen et al. (2020)	3	Valence of the focal emotion	Affective	ERC 5	0.19	130
Shen et al. (2020)	4	Valence of the focal emotion	Affective	ERC 5	0.03	312
Shen et al. (2020)	5	Valence of the focal emotion	Affective	ERC 5	0.13	115
Sheppes et al. (2011)	1	Intensity of the emotion	Affective	ERC 2	0.83	20
Sheppes et al. (2011)	2	Intensity of the emotion	Affective	ERC 2	0.85	20
Sheppes et al. (2011)	3	Intensity of the emotion	Affective	ERC 2	0.61	16
Sheppes et al. (2014)	1	Incentives (money)	Motivational	ERC 2	0.61	20
Sheppes et al. (2014)	1	Intensity of the emotion	Affective	ERC 2	0.82	20
Sheppes et al. (2014)	2	Affordances	Cognitive	ERC 2	0.32	30
Sheppes et al. (2014)	2	Intensity of the emotion	Affective	ERC 2	0.79	30
Sheppes et al. (2014)	3	Goal (use of strategy for short-term benefits or longer-term benefits)	Motivational	ERC 2	0.46	22
Sheppes et al. (2014)	3	Intensity of the emotion	Affective	ERC 2	0.94	22
Sheppes et al. (2014)	4	Intensity of the emotion	Affective	ERC 2	0.77	22
Sheppes et al. (2014)	5	Intensity of the emotion	Affective	ERC 2	0.47	26
Sheppes et al. (2014)	6	Intensity of the emotion	Affective	ERC 2	0.82	18
Suri et al. (2015)	2	Intensity of the emotion	Affective	ERC 2	0.09	25
Suri et al. (2015)	3	Affordances	Cognitive	ERC 2	0.16	88
Suri et al. (2015)	3	Presence of absence of a default strategy	Cognitive	ERC 2	0.60	88
Szczygieł & Baryła (2019)	1	Intensity of the emotion	Affective	ERC 2	0.81	40
Szczygieł & Baryła (2019)	2	Intensity of the emotion	Affective	ERC 2	0.85	40
Tahlier et al. (2013)	1	Nature of emotional event	Affective	ERC 5	0.35	49
Tahlier et al. (2013)	2	Control beliefs (manipulated)	Individual	ERC 5	0.27	79
Tahlier et al. (2013)	2	Nature of emotional event	Affective	ERC 5	0.32	79
Tamir (2005)	2	Anticipation of an upcoming task	Motivational	ERC 5	0.23	227
Tamir (2005)	2	Neuroticism	Individual	ERC 5	0.17	227
Tamir (2005)	2	Valence of the focal emotion	Affective	ERC 5	0.23	227
Tamir (2005)	3	Neuroticism	Individual	ERC 3	0.53	47
Tamir (2005)	4	Neuroticism	Individual	ERC 3	0.21	92
Tamir (2009)	3	Extraversion	Individual	ERC 5	0.41	40

(*Continued*)

Table 1. Continued.

Author	Study	Determinants that could potentially influence emotion regulation choice (ERC)	Category	Measure of ERC	*r*	*N*
Tamir (2009)	3	Valence of the focal emotion	Affective	ERC 5	0.14	40
Tamir &Ford (2009)	1	Gender	Individual	ERC 5	0.29	40
Tamir & Ford (2009)	1	Goal (of upcoming task)	Motivational	ERC 5	0.89	40
Tamir & Ford (2009)	2	Goal (of upcoming task)	Motivational	ERC 5	0.96	98
Tamir & Ford (2012a)	1	Gender	Individual	ERC 5	0.20	175
Tamir & Ford (2012a)	1	Goal (of upcoming task)	Motivational	ERC 5	0.55	173
Tamir & Ford (2012a)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.66	173
Tamir & Ford (2012a)	1	Personal preference for emotions	Individual	ERC 5	0.19	173
Tamir & Ford (2012b)	1	Goal (of upcoming task)	Motivational	ERC 5	0.35	71
Tamir & Ford (2012b)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.25	71
Tamir & Ford (2012b)	2	Goal (of upcoming task)	Motivational	ERC 5	0.37	48
Tamir & Ford (2012b)	2	Perceived utility of emotion(s)	Individual	ERC 5	0.36	48
Tamir et al. (2007)	1	Anticipation of an upcoming task	Motivational	ERC 5	0.61	50
Tamir et al. (2007)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.33	50
Tamir et al. (2008)	1	Goal (of upcoming task)	Motivational	ERC 5	0.84	82
Tamir et al. (2013)	1	Goal (of upcoming task)	Motivational	ERC 5	0.37	92
Tamir et al. (2013)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.22	92
Tamir et al. (2015)	1	Perceived utility of emotion(s)	Individual	ERC 5	0.32	57
Tamir et al. (2015)	2	Gender	Individual	ERC 5	0.36	66
Tamir et al. (2015)	2	Perceived utility of emotion(s)	Individual	ERC 5	0.44	66
Tamir et al. (2015)	3	Gender	Individual	ERC 5	0.26	69
Tamir et al. (2015)	3	Perceived utility of emotion(s)	Individual	ERC 5	0.37	69
Tamir et al. (2015)	4	Perceived utility of emotion(s)	Individual	ERC 3	0.50	62
Tamir et al. (2015)	5	Gender	Individual	ERC 5	0.28	60
Tamir et al. (2015)	5	Perceived utility of emotion(s)	Individual	ERC 5	0.27	60
Taylor & Friedman (2014)	1	Valence of the focal emotion	Affective	ERC 5	0.22	88
Taylor & Friedman (2015)	1	Valence of the focal emotion	Affective	ERC 5	0.42	47
Taylor & Friedman (2015)	2	Nature of emotional event	Affective	ERC 5	0.12	172
Taylor & Friedman (2015)	2	Valence of the focal emotion	Affective	ERC 5	0.39	172
Taylor & Friedman (2015)	3	Nature of emotional event	Affective	ERC 5	0.06	89
Taylor & Friedman (2015)	3	Valence of the focal emotion	Affective	ERC 5	0.27	89
Thoma et al. (2012)	1	Control beliefs	Individual	ERC 5	0.13	89
Tice et al. (2001)	3	Control beliefs (manipulated)	Individual	ERC 4	0.39	88
Tsai et al. (2007)	4	Culture	Social-Cultural	ERC 3	0.36	140
Tsai et al. (2007)	4	Goal (leader or matcher condition)	Motivational	ERC 3	0.33	140
Van Bockstaele et al. (2020)	1	Intensity of the emotion	Affective	ERC 2	0.52	38
Van Bockstaele et al. (2020)	2	Intensity of the emotion	Affective	ERC 2	0.65	38
Vishkin et al. (2020)	1	Specific emotions	Affective	ERC 2	0.29	96
Vishkin et al. (2020)	2	Specific emotions	Affective	ERC 2	0.31	40
Vishkin et al. (2020)	4a	Specific emotions	Affective	ERC 2	0.43	100
Vujović and Urry (2018)	1	Valence of the focal emotion	Affective	ERC 3	0.08	46
Vujović and Urry (2018)	2	Valence of the focal emotion	Affective	ERC 3	0.43	90
Vujović et al. (2014)	1	Level of arousal	Affective	ERC 3	0.25	58
Vujović et al. (2014)	1	Valence of the focal emotion	Affective	ERC 3	0.86	58
Wegener & Petty (1994)	1	Valence of the focal emotion	Affective	ERC 5	0.28	112
Wegener & Petty (1994)	2	Valence of the focal emotion	Affective	ERC 5	0.31	131
Wegener & Petty (1994)	3	Valence of the focal emotion	Affective	ERC 5	0.38	19
Wilson (2018)	2	Control beliefs	Individual	ERC 2	0.18	202
Wood et al. (2009)	1	Self-esteem	Individual	ERC 1	0.12	122
Wood et al. (2009)	1	Valence of the focal emotion	Affective	ERC 1	0.49	122
Wood et al. (2009)	3	Self-esteem	Individual	ERC 1	0.09	57
Wood et al. (2009)	3	Valence of the focal emotion	Affective	ERC 1	0.33	57
Wood et al. (2009)	4	Valence of the focal emotion	Affective	ERC 5	0.13	62
Xue et al. (2018)	1	Valence of the focal emotion	Affective	ERC 5	0.52	49
Yoon et al. (2020)	1	Mental health	Individual	ERC 3	0.29	76
Young & Suri (2020)	1	Affordances	Cognitive	ERC 2	0.04	67
Young & Suri (2020)	1	Intensity of the emotion	Affective	ERC 2	0.04	67
Young & Suri (2020)	1	Specific emotions	Affective	ERC 2	0.02	67

(*Continued*)

include individual/dispositional determinants (i.e. relating to the individual who is doing the regulating) and social-cultural determinants (i.e. relating to the broader context in which the emotion regulation attempt is taking place in). Within these broader categories, we distinguished between external and internal variants of affective, cognitive, and motivational determinants and between trait- and state-like variants of individual/dispositional determinants. Whether the factors were classed as external versus internal, or trait-like versus state-like depended on whether the respective factor was measured or manipulated. For example, affective, cognitive, and/or motivational factors that were manipulated (e.g. Josephson et al. (1996) exposed participants to sad film clips in an effort to make them feel sad) were considered external, whereas affective, cognitive, and/or motivational factors that were measured (e.g. Bolt (2016) measured the valence of participants emotions) were considered internal. Similarly, individual differences that were measured using self-report measures (e.g. neuroticism) were considered trait-like variants and individual differences that were manipulated (e.g. sleep deprivation) were considered state-like variants. It is also worth noting that some factors have been both measured and manipulated across different studies, such as control beliefs (Kappes & Schikowski, 2013; Tahlier et al., 2013).

The first author extracted the relevant information from the studies and the fourth author independently coded approximately 10% of the studies. To assess inter-rater reliability, Cohen's kappa was computed and reliability was very good across the measures (mean $\kappa = 0.82$, range = 0.57–1.00).

Meta-analytic strategy

If sufficient primary studies examined the relationship between a particular factor and a measure of intentions to regulate or emotion regulation choice, then random-effects meta-analysis was used to determine the magnitude of the relationship between the identified factor and measure. To ensure robust estimates of the relationships, sample-weighted average effect-sizes were only calculated using Meta-Essentials (Suurmond et al., 2017) when at least 5 studies examined the relationship. Effect size *r* (Cohen, 1992) was used to represent the strength of the relationship between the identified determinants and the measures of intentions to regulate and emotion regulation choice in each of the primary studies.

Where possible, the effect size was calculated by converting the means and *SDs*. However, if the mean and *SD* were not reported, then the available metric (e.g. the *F* ratio, *t* ratio, chi-square) was converted to effect size *r* or, for studies where the factor of interest was measured rather than manipulated, the effect size was based on the reported correlation between the factor and the measure of emotion regulation choice. When effect sizes could not be computed based on information in the report, the authors were contacted by email. Where studies examined multiple factors that might be associated with emotion regulation choice, the individual effect sizes were calculated and included in the relevant analyses. In cases where multiple effect sizes reflected the relationship between the same factor and emotion regulation choice in a single study, an average effect size was calculated to maintain the independence of effect sizes. In line with Funder and Ozer's (2019) guidelines, effect sizes around 0.05 were considered to be very small, 0.10 were considered to be small, 0.20 were considered to be medium, 0.30 were considered to be large and 0.40 or greater were considered to be very large.

Heterogeneity was assessed using the *Q* statistic (Cochran, 1954) and potential publication bias was assessed using Egger's regressions (Egger et al., 1997). If evidence of publication bias was highlighted, then Duval and Tweedie's (2000) trim and fill technique was applied and the estimated effect sizes were adjusted accordingly.[4] Due to the relatively small number of studies available for meta-analyses, subgroup or moderator analyses were not conducted.

Results

What influences intentions to regulate and emotion regulation choice?

Eighteen potential determinants of intentions to regulate and/or emotion regulation choice were identified across the 219 studies. The discussion of these below is organised with respect to the nature of the potential determinant – i.e. affective, cognitive, motivational, individual, or social-cultural.

Affective determinants

We identified five affective factors that could influence intentions to regulate and/or emotion regulation choice, including the *valence* and *intensity* of

the target emotion, along with the *level of arousal*, the *nature of the emotional event* (e.g. whether it is self-relevant, resolved etc.), and the *specific emotion* to be regulated.

The *valence* of the focal emotion was the most frequently studied factor ($k = 81$) and has been studied in relation to both intentions to regulate and across all four measures of emotion regulation choice. In terms of how valence influences intentions to regulate and emotion regulation choice, it seems that people are more motivated to regulate negative than neutral emotions (Wood et al., 2009). Studies have also found differences in the regulatory strategies that people choose in response to positive and negative stimuli. For example, Hay et al. (2015) found that participants had stronger preferences for distraction when regulating their responses to negative than when regulating their responses to positive images. Additionally, people generally prefer to approach positive stimuli and/or avoid negative stimuli (Isaacowitz et al., 2015, 2018; Sands et al., 2016; Sands & Isaacowitz, 2017; Vujović & Urry, 2018), but the valence of an individual's emotions can influence the stimuli that people choose to engage with or prefer, with several studies finding a mood-congruency effect in which participants select (e.g. Friedman et al., 2012, Study 1; Kim, 2013) or prefer (e.g. Erber et al., 1996, Study 1; Greenwood, 2010) stimuli that are in line with the valence of their mood. Sample-weighted average effect sizes ranged from medium ($r_{+\ adj} = 0.21$) to very large ($r_{+} = 0.41$) for the association between valence of the focal emotion and emotion regulation choice (see Table 2).

Fifty-eight studies examined the relationship between emotional *intensity* and intentions to regulate and emotion regulation choice. The emotional intensity of a situation has been most frequently examined in relation to the choice of regulatory strategy ($k = 51$), with studies repeatedly showing that people typically choose to distract themselves in response to relatively intense negative emotional situations while they choose to reappraise in response to less intense negative emotional situations (e.g. Hay et al., 2015; Sheppes et al., 2011, 2014). This pattern of results has also been demonstrated in response to positive images (e.g. Martins et al., 2018; Shafir et al., 2018) and negative sounds (Feldman & Freitas, 2019, Study 2), words (Aharon, 2018), and shocks (Sheppes et al., 2011, Study 3). Furthermore, this pattern of findings has been found when the intensity of an emotional experience is measured, rather than manipulated (e.g. Orejuela-Dávila et al., 2019; Shafir, Thiruchselvam, et al., 2016; Young & Suri, 2020). A few studies have also found that the emotional intensity of a situation influences intentions to regulate emotions (e.g. Mehta et al., 2017; Milyavsky et al., 2019) – with evidence that participants are more willing to regulate their emotional responses to high-intensity images compared to low-intensity images (Mehta et al., 2017) – and that intensity influences whether people choose to switch or maintain a regulation strategy (e.g. Birk & Bonanno, 2016; Dorman-Ilan et al., 2020; Murphy & Young, 2020). The intensity of the emotion was found to have a very large-sized relationship with both intentions to regulate ($r_{+} = 0.46$) and the choice of strategy ($r_{+} = 0.61$) (see Table 2).

Fourteen studies examined whether and how *levels of arousal* influence emotion regulation choice, with the most frequently studied outcome measure being the stimuli that participants choose to engage with ($k = 8$). The primary studies reported mixed effects of arousal. For example, some studies found that moderately and highly arousing stimuli were typically viewed more than less arousing stimuli (Sands & Isaacowitz, 2017), whereas other studies found no differences in the frequency with which they were chosen (Sands, 2017) or the amount of time that participants chose to engage with the stimuli (Sands et al., 2016). Similarly, some studies have found that people who are stressed (i.e. high in arousal) are more likely to choose to watch relaxing or undemanding content compared to those who are bored (i.e. low in arousal, Bowman & Tamborini, 2015; Bryant & Zillmann, 1984), whereas others have not found a difference between people who were overstimulated (i.e. stressed) and understimulated (e.g. in the selection of relaxing websites, Mastro et al., 2002). Other studies have found that arousal interacts with the valence of the stimuli (Vujović et al., 2014), or the age of the individual (e.g. Sands et al., 2016) to determine choice. Finally, there is some evidence that level of arousal influences whether people choose to switch to a different regulatory strategy, with Birk and Bonanno (2016) finding that people switch from reappraisal to distraction on more arousing trials (Study 1), although arousal did not affect when participants switched from distraction to reappraisal (Study 2). Taken together, there was a very large-sized association between level of arousal and the choice of stimuli ($r_{+} = 0.47$); however, as the

Table 2. Sample-weighted average relationships between determinants (organised by category) and measures of intentions to regulate and emotion regulation choice.

		Measure														
		Intentions to regulate			Choice of strategy			Choice of stimuli			Time spent with stimuli			Emotional preferences		
		95% CI			95% CI			95% CI			95% CI			95% CI		
Category	Factor	r_+	k	LL, UL	r_+	k	LL, UL	r_+	k	LL, UL	r_+	k	LL, UL	r_+	k	LL, UL
Affective	Intensity	0.46[a]	6	0.25, 0.63	0.61[a]	51	0.53, 0.68	–	1	–	–	–	–	–	–	–
	Arousal	–	1	–	–	3	–	0.47[a]	8	0.10, 0.72	–	2	–	–	–	–
	Valence	–	2	–	0.41[a]	6	−0.07, 0.73	0.32[a]	23	0.21, 0.42	0.21[a,b]	17	0.15, 0.40	0.22[a,b]	33	0.25, 0.30
	Nature	–	–	–	–	2	–	–	3	–	–	–	–	–	4	–
	Specific emotions	–	–	–	0.20[a]	6	−0.01, 0.39	–	1	–	–	–	–	–	2	–
Cognitive	Affordances	–	–	–	0.10	5	−0.03, 0.23	–	–	–	–	–	–	–	–	–
	Effort	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–
	Construal level	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
	Defaults	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Motivational	Goals	–	–	–	–	4	–	–	2	–	–	1	–	0.70[a]	10	0.40, 0.84
	Anticipation of upcoming task/situation	–	2	–	–	–	–	–	4	–	–	2	–	–	4	–
	Incentives	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Individual	Individual differences	–	4	–	0.18	7	0.10, 0.26	0.27[a]	19	0.21, 0.33	0.21[a]	5	0.01, 0.40	0.38[a]	22	0.27, 0.49
	Gender	–	–	–	–	–	–	0.23	5	0.12, 0.33	–	4	–	0.21[b]	9	0.13, 0.29
	Age	–	–	–	–	2	–	0.19	7	0.08, 0.30	0.17	10	0.11, 0.23	–	1	–
	Mental health	–	–	–	0.15	5	0.01, 0.29	–	4	–	–	–	–	–	2	–
Social-cultural	Social context	–	1	–	–	2	–	–	1	–	–	–	–	0.25	6	0.19, 0.31
	Cultural context	–	3	–	–	1	–	–	1	–	–	–	–	–	–	–

Note. Determinants are ordered within a category by the average size of their (sample-weighted average) relationship with the measures of intentions to regulate and emotion regulation choice. k = the number of independent tests of the association included in the analysis; r_+ = sample-weighted average effect size; 95% CI = the 95% confidence interval. Confidence intervals that do not contain zero indicate that the effect size is significant at the $p < .05$ level.

[a]Indicates that the Q statistic was significant at $p < .05$ suggesting that the effect sizes from the primary studies were heterogeneous. [b] Indicates that the sample-weighted average r_+ was adjusted using Duval and Tweedie's (2000) trim and fill technique.

studies above illustrate, the way that arousal influences emotion regulation choice is mixed.

Nine studies examined whether and how the *nature of the emotional event* affects emotion regulation choice by measuring participants' choice of strategy, stimuli (often music) and/or emotional preferences. Studies typically find that the nature of the emotional event influences regulatory choices. For example, studies have found differences in choices and/or preferences for music depending on whether the emotional event that the participants is trying to regulate is resolved or unresolved (Tahlier et al., 2013), whether the emotional event involves interpersonal loss (e.g. losing a significant other) or a non-interpersonal loss (e.g. failing an exam, DeMarco et al., 2015), and how the emotion is induced (e.g. reality-based vs. fiction based, DeMarco & Friedman, 2018). However, the self-relevance of the emotional event does not seem to influence preferences (Taylor & Friedman, 2015). Taken together, it seems how people choose to regulate their emotions can be influenced by the nature of the emotional event; however, too few studies have examined how the nature of the event relates to specific measures of emotion regulation choice to estimate the magnitude of the relationship using meta-analysis.

Finally, nine studies investigated whether *specific emotions* influence emotion regulation choice. For example, different discrete emotions may influence whether people choose distraction or reappraisal to regulate their emotions (Young & Suri, 2020) and/or what specific tactics they choose to reappraise. Vishkin et al. (2020) found that people preferred to use the reappraisal tactic of acceptance (e.g. tell themselves that "nothing could be done") when regulating sadness, but tried to think about alternative future consequences (e.g. tell themselves that "things will turn out better than expected") when regulating fear. Other studies suggest that anger influences people's preferences for different activities (Harmon-Jones et al., 2018) and the information that people choose to engage with (de los Santos & Nabi, 2019). Taken together, there was a medium-sized association between specific emotions and the choice of strategy ($r_+ = 0.20$, see Table 2).

Cognitive determinants

We identified four potential cognitive determinants of intentions to regulate and emotion regulation choice: *Affordances* or opportunities for using particular regulatory strategies inherent within emotional stimuli (e.g. reappraisal and distraction affordances), *cognitive effort* (e.g. how difficult it was to reappraise), *construal level* (e.g. low- vs. high-level construal) and the presence of a *default strategy,* which refers to the option selected if people do not decide.

Five studies examined the role of *affordances* on emotion regulation choice – in each case, operationalised in terms of what strategy people chose to regulate their emotions. The findings suggest that both self-reported reappraisal affordances (but not distraction affordances, Young & Suri, 2020) and experimentally manipulated reappraisal affordances (Sheppes et al., 2014, Study 2; Suri et al., 2015) are associated with a greater choice of reappraisal. Taken together, there was a small-sized association between affordances and choice of strategy ($r_+ = 0.10$, see Table 2).

Three studies examined the role of (anticipated or actual) *effort* associated with regulation on intentions to regulate. Milyavsky et al. (2019) manipulated cognitive effort in two studies by having participants make choices that they would not implement (low effort) and by making choices that they had to subsequently implement (high effort). In a third study, participants were presented with reappraisal instructions which were more effortful to implement (i.e. rethink as positive) or less effortful to implement (i.e. rethink as fake). The findings suggested that participants were more likely to choose reappraisal when the cognitive effort was reduced (Study 2); although there was also evidence that cognitive effort interacted with emotional intensity to determine whether people chose to reappraise or to watch the images (Studies 1 and 3). Specifically, participants were more likely to choose to reappraise their emotional response to high-intensity images when the cognitive effort was low compared to when the cognitive effort was high. Taken together, these findings suggest that people consider the effort required when making regulatory decisions.

Three studies examined whether an individual's *level of construal* influenced their emotional preferences. For example, Schwartz et al. (2018) manipulated the level of construal by presenting participants with a goal (e.g. maintain a healthy relationship) and asking them to either explain why they wished to pursue the goal (a procedure that invoked a high-construal level) or how they wished to pursue the goal (a procedure that invoked a low -construal level). The findings suggested that people are more likely to take into account how useful

emotions will be when they adopt a higher-level of construal compared to a lower level of construal. For example, invoking higher-level construals led participants to report stronger preferences for anger when anger was thought to be useful, whereas invoking low-level construals meant that preferences for emotions were not influenced by how useful they were thought to be. Taken together, these findings suggest that an individual's construal can influence what emotions they prefer to experience.

Finally, only one study to date has examined the role of defaults in shaping emotion regulation choice. Specifically, Suri et al. (2015, Study 3) either asked participants to choose whether to reappraise or watch an image, or provided participants with a default option (e.g, watch the image) and asked whether they wanted to override and choose the alternative option instead (if participants did nothing, then the default option was chosen). It was found that participants were less likely to choose to regulate their emotions (using reappraisal) if the default option was simply to watch the image (compared to if there was no default option or the default option was to use reappraisal). Thus, intentions to regulate may be influenced by the presence of a default option.

Motivational determinants

The primary studies considered three potential motivational determinants of intentions to regulate and/or emotion regulation choice: the goal or *goals* that are salient at the point of choice (e.g. approach vs. avoidance), the *anticipation of an upcoming task*, and *incentives* such as money.

Seventeen studies examined whether *goals* influence emotion regulation choice. For example, studies have found differences in which strategies people choose as a function of both *temporal* goals (e.g. studies have found a greater preference for reappraisal for long-term vs. short-term goals, Sheppes et al., 2014) and *directional* goals (e.g. studies have found that people prefer to use distraction when trying to decrease emotions, but rumination when trying to increase emotions, Millgram, Sheppes, et al., 2019). Some studies have examined the role of more *situational/instrumental* goals on emotion regulation choice. These studies typically find that people prefer emotions that will (or they believe will) help them to achieve a particular goal, whether it be a positive emotion, such as preferring to experience happiness when the goal of the task is to collaborate with someone (e.g. Tamir et al., 2013; Tamir & Ford, 2012a, 2012b) or a negative emotion, such as fear, when the goal is to avoid something dangerous (e.g. Tamir & Ford, 2009). Goals were found to have a very large-sized relationship with preferences for emotional stimuli ($r_+ = 0.70$, see Table 2).

Twelve studies found that *anticipating* an upcoming task or situation was associated with intentions to regulate and emotion regulation choice, suggesting that people consider the nature of the task ahead when choosing how to regulate their emotions. Specifically, evidence suggests that whether participants anticipate doing a task that involves creative or analytical skills influences what stimuli they choose to engage with (Cohen & Andrade, 2004, Studies 2 and 4). Similarly, whether a task is cognitively demanding (Tamir, 2005, Study 2) or potentially threatening (i.e. an intelligence test, Tamir et al., 2007) influences participants' emotional preferences. Evidence suggests that people also take into consideration whether they will interact with another person when choosing how to control their emotions, and also the mood of the person that they will interact with (Erber et al., 1996). That being said, other studies have not found that anticipating an upcoming task is associated with the amount of time that people choose to engage with stimuli (e.g. Cohrdes et al., 2017) and that the effect of anticipating an upcoming task on intentions to regulate can depend on the cultural background of the individual doing the regulating. For example, Ma et al. (2018) found that anticipating a task that requires high cognitive effort led American participants to report trying to savour (vs. dampen) positive emotions more frequently than it did Asian participants. It is worth noting that most studies to date have experimentally manipulated whether participants anticipate upcoming tasks and only one study to date has measured what future activities people (naturally) anticipated in their day-to-day lives at the point of choosing what media to engage with (Bolt, 2016). Nevertheless, these findings suggest that anticipating an upcoming task can influence intentions to regulate and emotion regulation choice.

Finally, only one study has examined the role of incentives on emotion regulation choice to date – specifically, Sheppes et al. (2014, Study 1) varied the monetary incentive associated with using different regulatory options between trials. Sheppes et al. found that increasing the monetary incentive of a

strategy increased its selection, suggesting that incentives influence choice.

Individual determinants

Studies to date have considered four individual determinants of intentions to regulate and/or emotion regulation choice including demographic determinants such as *age* and *gender* and also other individual determinants such as *mental health* and both state- and trait-like *individual differences* (e.g. levels of neuroticism, beliefs about emotions).

Twenty studies have examined the effect of *age* across all four measures of emotion regulation choice. These studies highlight age differences in the strategies that people typically choose in response to positive (Martins et al., 2018) and negative stimuli (Martins et al., 2018; Scheibe et al., 2015). For example, Scheibe et al. (2015) found that older participants showed a stronger preference for distraction than younger adults. Similarly, there appear to be age differences in the stimuli that participants choose to engage with (e.g. Sands & Isaacowitz, 2017) and the amount of time that participants choose to engage with different stimuli (e.g. Cohrdes et al., 2017; Livingstone & Isaacowitz, 2015). That being said, the findings were mixed, with some studies not finding any age differences in emotion regulation choice (e.g. Ossenfort & Isaacowitz, 2018). Sample-weighted average effect sizes for the association between age and emotion regulation choice were small, ranging from $r_+ = 0.17$ (for time spent with stimuli) to $r_+ = 0.19$ (for choice of stimuli).

Eighteen studies examined the effect of *gender* on three measures of emotion regulation choice. Studies have found differences between males and females in the stimuli that they choose to engage with (e.g. Biswas et al., 1994; Ozkaya, 2014) and their emotional preferences (Greenwood, 2010) following mood inductions, and also the amount of time that they choose to spend with different stimuli when expecting an opportunity to retaliate (Knobloch-Westerwick & Alter, 2006). While males and females have been found to prefer the same emotions as a function of the goal of the situation, women typically have stronger preferences than men (Tamir & Ford, 2012a). However, while primary studies have found differences in emotion regulation choice as a function of gender, as with the effects of age, the findings have been mixed. For example, some studies suggest that females have a stronger preference for positive (compared to negative) stimuli than males (e.g. Tamir et al., 2015), whereas others suggest the opposite (e.g. Erber et al., 1996) or have not found an effect of gender on emotion regulation choice (e.g. Kim & Oliver, 2011; Zillmann et al., 1980). Nevertheless, meta-analytic results suggest that, across the evidence to date, gender has medium-sized associations with the choice of stimuli ($r_+ = 0.23$) and emotional preferences ($r_{+adj} = 0.21$).

Eleven studies examined the association between different *mental health disorders* and measures of emotion regulation choice. These studies did not typically find differences in emotion regulation choice across different mental health disorders including bipolar disorder (Hay et al., 2015), borderline personality disorder (Sauer et al., 2016), or major depressive disorder (Millgram, Sheppes, et al., 2019). Other studies have, however, found that depressed participants are more likely to choose to engage with sad stimuli compared to healthy controls/those without a diagnosis (e.g. Arens & Stangier, 2020; Millgram et al., 2015, Study 1 and 2; Yoon et al., 2020). Similarly, differences between these populations have been found regarding the direction with which participants choose to regulate their emotions (e.g. Millgram et al., 2015; Millgram, Joormann, et al., 2019), although there are inconsistent findings across studies. For example, Millgram et al. (2015) found that depressed participants were more likely to choose to upregulate sadness than non-depressed participants but there was no difference in how they responded to happy stimuli, whereas Millgram, Joormann, et al. (2019) found that depressed participants were less likely to choose to upregulate their reactions to happy stimuli than non-depressed participants, but there were no differences in responses to sad stimuli. These differences may, however, be accounted for by differences in how the task was administered across studies. For example, participants in Millgram et al.'s (2015) study completed the tasks in a lab setting in which active training was provided by a researcher, whereas participants in Millgram, Joormann, et al.'s (2019) study completed the tasks online with written instructions. Therefore, additional research is needed. Overall, the sample-weighted average size of the relationship between mental health disorders and choice of strategy was small ($r_+ = 0.15$, see Table 2).

Fifty-seven studies examined the association between both state- and trait-like *individual differences* and intentions to regulate and/or emotion

regulation choice. In terms of intentions to regulate, the findings suggest that motivation to repair mood may depend on levels of self-esteem (e.g. Wood et al., 2009) and/or agreeableness (e.g. Cortes et al., 2019), with higher levels of self-esteem and/or agreeableness typically associated with being more motivated to regulate emotions. Self-esteem has also been associated with what strategies people choose to regulate their emotions (Shafir, Guarino, et al., 2016) and the stimuli that people choose to engage with (Heimpel et al., 2002). Other individual differences that have been associated with how people choose to regulate their emotions include neuroticism (Tamir, 2005), dispositional regulatory style (i.e. an individual's regulation tendencies, such as the tendency to ruminate, Chen et al., 2007; Thoma et al., 2012) and (dispositional) preferences for particular emotions (Arens & Stangier, 2020; Tamir & Ford, 2012a).

Furthermore, several studies have found positive relationships between people's attitudes towards a particular emotion and whether they choose to strive for, or engage with, that emotion (Markovitch et al., 2016, 2017). Emotion regulation choice has also been found to be associated with people's self-reported and/or externally manipulated beliefs about particular emotions, such including how much control they believe they have over their emotions (e.g. Rovenpor & Isbell, 2018; Wilson, 2018) and how useful they perceive different emotions to be (e.g. self-reported perceived utility, Tamir et al., 2015; Tamir & Ford, 2012a, 2012b). The typical finding here is that people prefer emotions that they believe will be instrumental/useful. Sample-weighted average effect sizes ranged from medium ($r_+ = 0.18$) to large ($r_+ = 0.38$) for the association between individual differences and emotion regulation choice.

Social-cultural determinants

To date, ten studies have examined potential *social* determinants of emotion regulation choice. For example, the extent to which people feel the need to belong within a group has been found to shape emotional preferences (Porat, Halperin, Mannheim, et al., 2016), with people being more motivated to experience even negative group-based emotions such as sadness if they believe that it will help them to connect with their group. Political ideology has also been found to influence people's preferences for group-based emotions (i.e. their motivation to experience emotions as a member of a group) and what strategy they typically choose to regulate emotions. More specifically, Pliskin et al. (2018) found liberals were more likely than conservatives to choose distraction than reappraisal in response to images depicting outgroup harm. Additionally, when faced with a threat to their group, Porat et al. (2018) found that liberals were more motivated than conservatives to engage with stimuli that are likely to lead them to experience collective angst. Taken together, social determinants were found to have a medium-sized association with emotional preferences ($r_+ = 0.25$, see Table 2).

Finally, only five studies have examined potential *cultural* determinants of intentions to regulate and/or emotion regulation choice to date. As described above, culture has been found to shape intentions to regulate (e.g. evidence suggests that American's prefer to savour positive emotions more than Asian participants, Ma et al., 2018), but has also been found to be associated with what strategies people choose in response to high-intensity (but not low-intensity) images. For example, Mehta et al. (2017) found that Indian participants were more likely to use reappraisal for high-intensity images than the American participants. Therefore, although the evidence base is currently quite limited, these studies suggest that cultural factors may influence emotion regulation choice.

General discussion

The present review sought to identify the determinants both of *whether* people try to regulate their emotions (i.e. intentions to regulate) and *how* people choose to regulate their emotions (i.e. emotion regulation choice). A systematic search identified 219 studies that measured or manipulated one or more potential determinants and examined whether it influenced measures of intentions to regulate and/or emotion regulation choice. Drawing on and extending Sheppes et al. (2014) framework, we categorised the potential determinants as affective, cognitive, motivational, individual, or social-cultural. Where there was sufficient evidence (i.e. at least 5 studies), meta-analysis was used to quantify the size of the relationships between the potential determinants and the various measures of intentions to regulate and emotion regulation choice that have used in the empirical studies to date.

Overview of findings

Affective factors have been the most frequently studied category of potential determinants to date ($k = 171$). The findings from the primary studies suggest that both intentions to regulate and emotion regulation choice can be influenced by general aspects of emotion, such as intensity (e.g. Sheppes et al., 2011), valence (e.g. Kim, 2013; Rovenpor et al., 2013) and arousal (e.g. Bowman & Tamborini, 2015), as well as more specific aspects of emotion, such as the specific emotion to be regulated (e.g. Vishkin et al., 2020) and the nature of the emotional event (e.g. whether it is resolved or not, Tahlier et al., 2013). Overall, affective factors typically had medium-to-very large associations with intentions to regulate and emotion regulation choice (effect sizes ranged from $r_+ = 0.20$ to 0.61).

Cognitive factors have been the least frequently studied category to date ($k = 12$). Despite this, cognitive factors do seem to influence both intentions to regulate and also emotion regulation choice. For example, the effort associated with regulating and affordances or opportunities inherent within a stimulus have both been found to influence whether a person chooses to regulate using reappraisal (e.g. Milyavsky et al., 2019; Young & Suri, 2020). As cognitive determinants have only been considered with respect to intentions to regulate and only two measures of emotion regulation choice to date, future research might not only examine the influence of other cognitive factors on choice, but also how cognitive determinants shape other measures of emotion regulation choice (e.g. the stimuli that people choose to engage with in an attempt to control their emotions).

In terms of motivational factors, different goals, such as temporal (e.g. Sheppes et al., 2014), directional (e.g. Millgram, Sheppes, et al., 2019), and situational/instrumental goals (e.g. Tamir & Ford, 2012a), and also the nature of an upcoming task (e.g. creative vs. analytical, Cohen & Andrade, 2004) or interaction (e.g. Erber et al., 1996) have been found to influence how people choose to regulate their emotions. Taken together, based on the evidence reviewed, it seems that people typically choose to direct their emotions in a way that they believe will help them to achieve a goal or prepare for a task, such as neutralising their mood ahead of a social interaction (Erber et al., 1996). Overall, the evidence to date suggests that motivational factors typically have a very-large sized relationship with emotion regulation choice ($r_+ = 0.70$).

Individual factors have been frequently examined ($k = 106$) across both intentions to regulate and all measures of emotion regulation choice. Findings to date suggest that demographic factors (e.g. age, Cohrdes et al., 2017; gender, Biswas et al., 1994), mental health (e.g. Millgram et al., 2015) and both trait-like and state-like individual differences, including levels of neuroticism (Tamir, 2005) and beliefs about the utility of emotions (e.g. Tamir et al., 2015) influence both whether and how people choose to regulate their emotions. The findings support the idea that people typically choose to regulate in ways that are consistent with their individual tendencies (e.g. Chen et al., 2007), attitudes (e.g. Markovitch et al., 2016, 2017), and beliefs (e.g. Tamir & Ford, 2012a, 2012b). The findings also suggested that older people are more likely to choose to regulate their emotions in a more pro-hedonic manner (e.g. Cohrdes et al., 2017); and that gender is associated with emotion regulation choice, but that the findings to date with respect to how gender is associated with emotion regulation choice are mixed (e.g. Erber et al., 1996; Tamir et al., 2015). Individual factors typically have a small-to-large sized relationships with intentions to regulate and emotion regulation choice (effect sizes ranged from $r_+ = 0.18$ to 0.38).

The final category of potential determinants that we identified in the present review were social-cultural factors. Compared to the other potential determinants of emotion regulation choice, social-cultural determinants were relatively understudied, which is perhaps surprising given extensive evidence on the influence and importance of contextual determinants on emotion regulation more generally (see, for example, Greenaway et al., 2018 for a review). However, the evidence to date suggests that social determinants typically have a medium-sized relationship with emotion regulation choice ($r_+ = 0.25$) and, together, provide preliminary evidence that both the immediate social context and the broader cultural context can influence whether and how someone chooses to regulate their emotions.

A framework for understanding intentions to regulate and emotion regulation choice

Figure 2 proposes a framework for understanding emotion regulation choice. The framework was

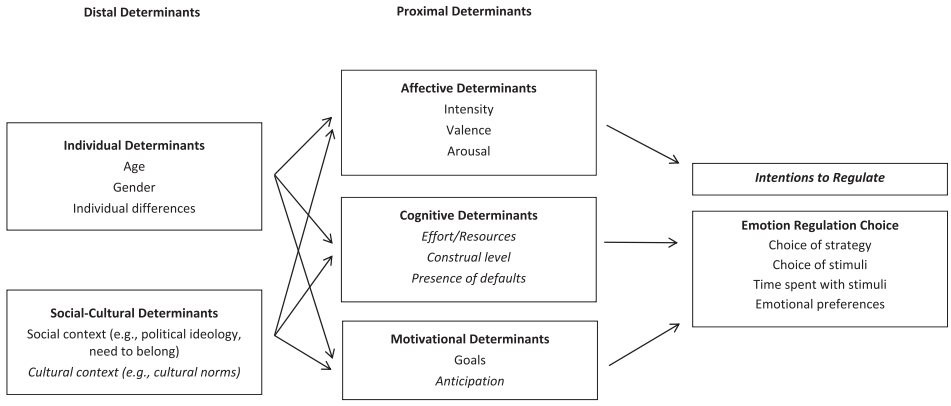

Figure 2. Framework for understanding the determinants of intentions to regulate and emotion regulation choice.

Note. Factors that seem likely to be associated with whether and how people choose to control their emotions but have not received sufficient empirical attention to date are presented in italics, while factors for which convincing evidence has emerged are in normal font.

generated applying the guidelines outlined by Fusar-Poli and Radua (2018) to the findings of the present review determine whether the evidence that a given factor is associated with intentions to regulate and/or emotion regulation choice is (i) convincing, (ii) highly suggestive, (iii) suggestive, (iv) weak, or (v) non-significant (see Table 3).[5] Determinants for which we found "highly suggestive" or "convincing" evidence were reliably associated with at least one measure of emotion regulation choice were included in the framework (shown in normal font). We recognise, however, that the evidence to date regarding whether and how people choose to regulate their emotions is relatively limited in terms of both the potential determinants that have been studied and the number of studies examining particular determinants. Therefore, our proposed framework for understanding emotion regulation choice also includes factors that seem likely to be associated with whether and how people choose to regulate their emotions, but that have received insufficient empirical attention to date (these factors are show in italic font).

The resulting framework makes it clear that whether and how people choose to regulate their emotions is influenced by affective, individual, motivational, and social-cultural determinants. The evidence regarding affective factors such as the valence, arousal and intensity of the emotional situation is "highly suggestive", indicating they are reliably associated with emotion regulation choice. We also found that the individual determinants of demographic factors such as age and gender, and individual differences such as self-esteem and beliefs and attitudes about emotions were reliably associated with emotion regulation choice. Furthermore, motivational determinants, such as the goal of the current situation and social-contextual determinants such as political ideology and the need to belong were reliably associated with at least one measure of emotion regulation choice. Taken together then, the present review suggests that people making decisions about how to regulate their emotions are sensitive to factors relating to themselves, the emotion they are regulating, and also the immediate situation and broader social context that the regulation attempt is taking place in.

In terms of factors that seem likely to be associated with whether and how people choose to regulate their emotions, but that have received insufficient empirical attention to date, the present review highlights that only a few studies have examined whether and how the social and cultural context influences emotion regulation choice (e.g. Ma et al., 2018; Mehta et al., 2017, Study 3). This is perhaps surprising as a number of studies have examined the effect of culture on other facets of emotion regulation, such as the use of regulatory strategies (e.g. De Leersnyder et al., 2013; Matsumoto et al., 2008; Mauss et al., 2010). Thus, the proposed framework includes culture, and we call for further research to understand whether and how people choices about emotion regulation are shaped by cultural determinants.

Similarly, there were only sufficient studies to examine the magnitude of the relationship between one of the identified determinants (namely, the

Table 3. Assessment of the strength of the evidence that each factor is associated with emotion regulation choice.

Measure of emotion regulation choice / Factor	Sample Size (number of cases)	Sample-weighted average effect size (95% CI)	Significance (under random-effects model)	95% prediction interval	I^2	Evidence of small-study effects / excess significance bias	Largest study effect size (95% CI)	Strength of evidence
Intentions to regulate								
Intensity	390	0.46 (0.25, 0.63)	<.001	[−0.04, 0.77]	66.08%	No/No	0.27 (0.10, 0.43)	Weak
Choice of strategy								
Intensity	2499	0.61 (0.53, 0.68)	<.001	[−0.05, 0.90]	86.54%	No/No	0.64 (0.52, 0.73)	Highly Suggestive
Valence	370	0.41 (−0.07, 0.73)	.003	[−0.73, 0.95]	93.19%	No/No	0.07 (−0.14, 0.27)	Weak
Specific Emo.	413	0.20 (−0.01, 0.39)	.001	[−0.26, 0.58]	62.48%	No/No	0.43 (0.25, 0.58)	Weak
Affordances	295	0.10 (−0.03, 0.23)	.032	[−0.03, 0.23]	0.00%	No/Yes	0.16 (−0.05, 0.36)	Weak
Mental health	311	0.15 (0.01, 0.29)	.004	[0.01, 0.29]	0.00%	No/Yes	0.20 (−0.02, 0.40)	Weak
Individual diff.	605	0.18 (0.10, 0.26)	<.001	[0.10, 0.26]	0.00%	No/No	0.18 (0.04, 0.31)	Highly Suggestive
Choice of stimuli								
Valence	3192	0.32 (0.21, 0.42)	<.001	[−0.10, 0.64]	84.23%	No/No	0.14 (0.04, 0.26)	Highly Suggestive
Arousal	790	0.47 (0.10, 0.72)	.003	[−0.56, 0.93]	94.87%	No/No	0.16 (0.03, 0.29)	Highly Suggestive
Age	863	0.19 (0.08, 0.30)	<.001	[0.00, 0.37]	31.79%	No/No	0.26 (0.02, 0.28)	Highly Suggestive
Gender	600	0.23 (0.12, 0.33)	<.001	[0.12, 0.33]	0.00%	No/Yes	0.24 (0.11, 0.36)	Highly Suggestive
Individual diff.	2305	0.27 (0.21, 0.33)	<.001	[0.08, 0.44]	46.18%	No/Yes	0.31 (0.22, 0.39)	Highly Suggestive
Time spent with stimuli								
Valence	1969	0.21 (0.15, 0.40)	<.001	[−0.15, 0.62]	81.52%	No/Yes	0.20 (0.08, 0.32)	Highly Suggestive
Age	1081	0.17 (0.11, 0.23)	<.001	[0.11, 0.23]	0.00%	No/No	0.11 (−0.02, 0.24)	Suggestive
Individual diff.	689	0.21 (0.01, 0.40)	.004	[−0.23, 0.58]	72.11%	No/No	0.35 (0.24, 0.45)	Suggestive
Emotional preferences								
Valence	4104	0.22 (0.25, 0.30)	<.001	[0.02, 0.45]	60.39%	Yes/Yes	0.13 (0.05, 0.22)	Highly Suggestive
Goal	839	0.70 (0.40, 0.84)	<.001	[−0.43, 0.97]	95.81%	No/No	0.55 (0.43, 0.64)	Highly Suggestive
Gender	838	0.21(0.13, 0.28)	<.001	[0.11, 0.29]	3.59%	Yes/Yes	0.20 (0.05, 0.34)	Highly Suggestive
Individual diff.	2214	0.38 (0.27, 0.49)	<.001	[−0.20, 0.77]	88.78%	No/No	0.46 (0.43, 0.70)	Highly Suggestive
Social context	764	0.25 (0.19, 0.31)	<.001	[0.19, 0.31]	0.00%	No/No	0.22 (0.09, 0.34)	Highly Suggestive

Note. Criteria for concluding that evidence is convincing: > 1000 cases, $p < .001$, $I^2 < 50\%$, 95% prediction interval excludes zero, no evidence of small-study effects and no evidence of excess significance bias.
Criteria for concluding that evidence is highly suggestive: > 500 cases, $p < .001$ and largest study with the 95% CI excludes zero.
Criteria for concluding that evidence is suggestive: > 500 cases and $p < .001$.
Criteria for concluding that evidence is weak: $p < .05$. Non-significant criteria: $p > .05$.

intensity of the emotional situation) and intentions to regulate. Intentions to regulate are likely to depend on the outcome of a cost–benefit analysis in which people consider the value, feasibility, and perceived cost of the effort required to achieve the emotion regulation goal (Milyavsky et al., 2019; Shenhav et al., 2013, 2017; Tamir, 2020). Therefore, future research may want to examine whether and how other factors that shape the relative costs vs. benefits of regulation shape intentions to regulate. For example, injunctive and descriptive norms have been associated with intentions to engage with other behaviours (Borsari & Carey, 2003; Rivis & Sheeran, 2003), and therefore could influence intentions to regulate emotions. For example, people may be more likely to regulate when they believe that others would approve of their doing so and/or that others would regulate in a similar situation. Further research on intentions to regulate and the putative determinants of intentions would strengthen this aspect of the proposed framework for understanding intentions to regulate and emotion regulation choice.

The framework also suggests that it may be valuable to differentiate between relatively proximal determinants of emotion regulation choice and more distal determinants. Proximal determinants can be considered as more immediate factors that may have more direct effects on emotion regulation choice, whereas distal determinants may have more indirect effects on emotion regulation choice. As seen in Figure 2, we propose that some of the factors identified may be more distal determinants, namely the individual and social-cultural determinants, whereas the affective, motivation and cognitive determinants may be more proximal determinants of emotion regulation choice. Furthermore, it is possible that the proximal determinants suggest mechanisms by which the more distal determinants influence how people choose to regulate their emotions. For example, the effect of individual determinants, such as age or gender, on emotion regulation choice may be mediated by more proximal determinants, such as the valence of the emotion to be regulated. That is, older people may be more likely to choose to engage with more positive stimuli or to immediately reduce negative emotions by choosing distraction over reappraisal because they prioritise optimising their immediate well-being and prefer to experience positive emotions (Carstensen, 2006; Carstensen et al., 1999). Future studies may aim to directly examine the framework proposed here.

Limitations and future directions

One advantage of identifying and categorising the potential determinants of emotion regulation choice, along with measures of emotion regulation choice, is that it provides a means to organise the growing number of empirical studies examining emotion regulation choice. However, this approach also reveals gaps in the empirical work conducted to date. For example, the impact of specific determinants on emotion regulation choice has typically been evaluated with respect to specific measures of emotion regulation choice (i.e. within specific paradigms). Fifty-eight of the studies we included examined the intensity of the emotion, but 51 of these studies looked at the impact of intensity on participants' choice of strategy; no studies considered whether and how the intensity of the emotion influences peoples' preferences for stimuli or the amount of time that they spend viewing particular stimuli in an effort to regulate their emotions. Likewise, 17 studies examined whether salient goals affected choice, but 10 of these studies measured emotion regulation choice in terms of participants' preferences for stimuli. Thus, it is difficult to compare the various determinants, as some determinants have only been considered with respect to some (and sometimes only one) measure of emotion regulation choice.

Additionally, the impact of specific determinants has often been examined using the same measures and/or manipulations. Future research may want to consider examining the influence of these potential determinants of emotion regulation choice using different paradigms and/or measures in an effort to provide a conceptual replication. For example, emotional intensity is often manipulated through the use of images, but the intensity of emotions is not only shaped by aspects of the situation (i.e. the images that participants look at), but also aspects of the individual, such as how sensitive they are (Aron et al., 2012; Jagiellowicz et al., 2016). Furthermore, it is possible that some of the measures of emotion regulation choice that we identified, such as the stimuli that participants choose to engage with, may confound people's goals (i.e. the emotional state they want to achieve by regulating) with the strategy that they choose to achieve the desired outcome (i.e. engaging with goal-congruent stimuli). Therefore, future research should also try to disentangle emotional goals from the means to do so (Tamir et al., 2020).

It is also worth noting that the studies included in this review studied emotion regulation choice in the laboratory or collected data online, which may raise questions regarding the ecological validity of the findings. Although some studies conducted in the field have purportedly measured emotion regulation choice, they typically do so by measuring the use of emotion regulation strategies (e.g. English et al., 2017; Wilms et al., 2020), which may not necessarily reflect a conscious, active choice (Sheppes, 2020). For example, many behaviours occur automatically and are driven by habits rather than deliberate choice (e.g. Neal et al., 2011) – something that also occurs when regulating emotions (Koole et al., 2015; Mauss et al., 2007). Therefore, while studies using experience sampling help to understand what strategies people use in daily life, they may not accurately measure what strategies people choose in particular situation. Consequently, future research may choose to test hypotheses proposed by the framework presented in Figure 2 outside of the laboratory, to address possible concerns regarding the ecological validity of current research on emotion regulation choice. For example, experience sampling methods could include explicit questions about the strategies that people chose in particular situations.

Based on the evidence reviewed, there are several other possible avenues for future research. For example, some factors (e.g. level of arousal and gender) have had a mixed effect on emotion regulation choice; therefore, the precise nature of the effects may warrant further examination. Similarly, there is limited evidence regarding the effect of particular determinants, such as social-cultural factors. The importance of these factors in emotion regulation has previously been highlighted (see Greenaway et al., 2018), therefore this may prove to be a fruitful area for future research. Finally, the effect of some factors (e.g. goals and incentives) has only been investigated using manipulations that provide participants with a goal and/or incentive. Such goals are therefore externally determined. Given that externally vs. autonomously motivated goals have been found to have quite different impacts on a range of outcomes (for a review, see Ryan & Deci, 2000), future research may measure people's personally held goals or incentives to examine the influence of these on whether and how people choose to control their emotions.

Conclusion

The present research responded to the need for a systematic review of the empirical work to date examining whether and how people choose to regulate their emotions. Eighteen potential determinants of intentions to regulate and/or emotion regulation choice were identified; 11 of which had been studied sufficiently frequently (i.e. $k > 5$) to allow meta-analysis to estimate the magnitude of the relationship between the potential determinant and the measure (s) of emotion regulation choice. The findings identify affective, cognitive, motivational, individual, and social-cultural determinants that are associated with emotion regulation choice, suggesting that decisions about how to regulate are influenced by aspects of the individual doing the regulating, the emotion that is being regulated, as well as the immediate situation and broader context in which the regulation is taking place. This being said, it is also clear that further research is needed, especially regarding potential determinants of intentions to regulate and the influence of some determinants on some measures of choice. It is our hope that categorising the potential determinants and measures of emotion regulation choice, along with the proposed framework for understanding emotion regulation choice, provides the basis for a coordinated and systematic programme of research to understand whether and how people regulate their emotions.

Notes

1. Choices between regulatory strategies can also be referred to as "regulatory selection choices" (Sheppes, 2020).
2. This meant that studies using the Emotion Regulation Questionnaire (Gross & John, 2003), the Emotion Regulation Profile – Revised (Nelis et al., 2011), or experience sampling methods (e.g., English et al., 2017) were typically excluded because they assess which strategies were used or are typically used in different situations. Although a number of studies have referred to the ERP-R as a measure of emotion regulation choice (e.g., Ortner et al., 2017, 2018), this measure asks participants to identify how they would typically respond to situations. Therefore, people are likely to report what they have previously used in these situations, rather than what they would necessarily choose to do.
3. Similarly, studies which focused on the consumption of food and/or drink were excluded as it could not be determined whether what the participants were eating and/or the amount that they consumed reflected a choice that was intended to regulate emotions and/or whether the emotions induced regulated participants food intake.

4. Adjusted effect sizes are denoted using $r_{+\ adj}$ and funnel plots for each of the relationships can be found at https://osf.io/xpzyf/
5. Due to the limited number of studies examining the association between some of the factors and emotion regulation choice, we amended Fusar-Poli and Radua's criteria and used the benchmark for the number of cases to be greater than 500 (as opposed to 1000) for the evidence to be classed as either "suggestive" or "highly suggestive". Additionally, as Meta-Essentials only reports significance to 3 decimal places, we amended the significance level to $p < .001$, for "suggestive", "highly suggestive" and "convincing" evidence (from $p < .00001$). All of the other criteria remained the same.

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ORCID

Meghann Matthews http://orcid.org/0000-0002-7093-0890
Thomas L. Webb http://orcid.org/0000-0001-9320-0068
Miranda Snow http://orcid.org/0000-0003-4894-4329

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