

# Selection of Photos and News Headlines Demonstrate How Valenced Emotion Motives Guide Emotion Regulation

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DOI: <https://doi.org/10.47772/IJRISS.2026.100300454>

Received: 27 March 2026; Accepted: 02 April 2026; Published: 12 April 2026

## ABSTRACT

The aim of this study was to determine whether valenced emotion motives assessed by the General Emotion Regulation Measure (GERM, Bloore et al., 2020) constrain stimulus selection behaviour. We hypothesised that pro-hedonic emotion motives would predict selection of positive stimuli, and contra-hedonic emotion motives would predict selection of negative stimuli. Self-reported GERM-based emotion motives were assessed, yielding continuous scores for trait-based assessments of pro-hedonic and contra-hedonic emotion motives. A sample of 199 university students (149 female, average age = 19.8 years) was asked to select 12 out of a total of 36 valenced descriptive labels (e.g., “cute puppy”) that briefly described corresponding images, and the same for news headlines (e.g., “147 people dead in massacre”). Stimuli were previously rated for valence, and each participant received an average valenced selection score based on which stimuli they chose. A latent variable moderation analysis found that pro-hedonic motives significantly and positively predicted selection of positive stimuli. And second, it showed that contra-hedonic motives significantly and positively predicted selection of negative stimuli, but only if the individual lacked pro-hedonic emotion motives. These findings suggest that valenced general emotion motives play a significant role in what Gross (1998a) described as ‘situation selection’ emotion regulation.

**Key words:** Valence, motivation, situation selection, emotion regulation, pro-hedonic, contra-hedonic

## SELECTION OF PHOTOS AND NEWS HEADLINES DEMONSTRATE HOW VALENCE MOTIVES GUIDE EMOTION REGULATION

Theory and empirical research on emotion regulation usually involves consideration of the critical dimension of emotion valence. For example, Gross (2015) has noted “When asked about their emotion regulation, people often describe efforts to down-regulate negative emotions. People also report trying to up-regulate positive emotions” (p. 5). In this vein he proposed a 2 X 2 taxonomy of emotion efforts that described the up-regulation vs. down-regulation of valenced (positive vs. negative) emotions. Theoretical work by Tamir (2016; Tamir et al., 2020) supports and extends Gross’s contention that emotion regulation is significantly shaped by people’s valenced emotion regulation goals.

Importantly, the field has lacked an emotion regulation measure that is capable of empirically assessing the full 2 X 2 taxonomy proposed by Gross (2015) until Bloore et al. (2020) suggested the use of the General Emotion Regulation Measure (GERM) to capture the four quadrants defined by emotion valence crossed by up- and down-regulation. The primary goal of the present study, then, was to test Gross’ taxonomy of valenced emotion regulation efforts within the context of what he termed “situation selection” (Gross, 1998a) with GERM-based descriptions of emotion motives. We expected that individuals who hold pro-hedonic emotion motives (i.e., they strive to experience positive emotions) would more likely select photos and news headlines conveying positive topics (e.g., a photo of a cute puppy), whereas individuals who hold contra-hedonic emotion motives (i.e., they strive to experience negative emotions) would more likely select stimuli conveying negative topics (e.g., a news headline about a disastrous aircraft crash).

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## The Role of Valence in Emotion Regulation

Walle and Dukes (2023) have identified several important considerations of studying valence in affective science, and the present work specifically addresses and amplifies several of their concerns. First, they warned against “oversimplification” of operationalising emotion valence by either grouping emotions into global positive and negative categories or by selecting individual emotion terms to represent these two broad categories. Second, they emphasised that different emotions perform different functions, or in the words of Roseman (2011), they stimulate different “action tendencies”. And third, they observed that ignoring context can lead to empirical imprecision. The present research addresses these issues by: 1) considering valence at both the group level (positive affect and negative affect) and at the individual emotion term level; 2) examining whether emotion motives exert an influence (action tendencies) on actual behaviour; and 3) asking participants to participate in a task similar to common, everyday activities (i.e., scanning the internet for interesting pictures and stories)..

Crucially, we employed the recently developed self-report measure, the GERM (Bloore et al., 2020), to assess in a balanced and symmetrical fashion the motivations to experience and to avoid experiencing groupings of both positive and negative emotions. The GERM constitutes an advancement in the study of emotion valence in that it assesses “*striving* for positive affect and negative affect” (Jose et al., 2024, 2025) rather than relying on contemporaneous assessments of PA and NA, e.g., the PANAS measure. We predicted that these emotion motives would significantly regulate choice behaviour of photos and news headlines because they tap aspirational valenced emotion motivations.

The GERM measures how often individuals try to experience and try to avoid experiencing 24 emotions (12 positive and 12 negative) on a 5-point Likert scale from ‘never’ (1) to ‘always’ (5). The GERM measure yields four emotion motives: 1) trying to experience positive emotions (ExpPos), 2) trying to experience negative emotions (ExpNeg), 3) trying to avoid experiencing positive emotions (AvdPos), and 4) trying to avoid experiencing negative emotions (AvdNeg). The first and fourth motives are termed pro-hedonic motives, and the second and third motives are termed contra-hedonic motives (Gross, 2015). Bloore et al. (2020) further employed latent profile analysis to identify three distinct latent profiles: *normative group* (low contra-hedonic motives and high pro-hedonic motives); *happiness aversion group* (higher levels of contra-hedonic motives and lower levels of pro-hedonic motives relative to the normative group); and the *non-regulating group* (low levels of all four emotion motives). In our present work we sought to evaluate whether GERM profiles and/or motives are able to pass the stringent test of predicting behaviour within the context of Gross’ (1998a) ‘situation selection’ paradigm.

Situation selection is a form of ER that involves choosing a situation to either increase the likelihood of experiencing desirable emotions or decrease the likelihood of experiencing undesirable emotions (Thompson, 1998). Situation selection involves a proactive approach where individuals anticipate how a situation might affect their emotions before deciding whether to engage or avoid the situation (Gross, 2015), consistent with the GERM’s emphasis upon striving to experience emotions. In a study similar to ours, Livingstone and Isaacowitz (2015) assigned participants of different ages to either a “just view” condition or an emotion regulation condition, where they freely selected among negative, neutral, and positive stimuli. They found that older adults demonstrated pro-hedonic emotion regulation by spending more time on positive and neutral material regardless of explicit goal instructions, compared to younger adults who engaged in such behaviour only when explicitly instructed to minimize their negative emotions. Similar to this work, we wanted our participants to freely choose among negative, neutral, and positive stimuli. Our research aims were focused on whether trait-like emotion motives would significantly predict stimuli selection.

### Goals of the Present Study

Based on previous literature (e.g., Bloore et al., 2020), the present study was designed to test the ability of the GERM scale to predict individuals’ selection behaviour for a range of emotionally valenced photos and news headlines.

**Hypothesis 1** stipulated that the normative GERM latent profile would yield a higher selection mean score (signifying selection of more positive than negative stimuli) than the happiness aversion latent profile, and the non-regulating latent profile would fall in between.

**Hypothesis 2** predicted that continuous pro-hedonic motives would positively predict higher selection mean scores, whereas continuous contra-hedonic motives would, at the same time, be a significant negative predictor of scores.

**Hypothesis 3:** We also examined whether pro-hedonic and contra-hedonic motives would jointly predict significant unique variance in choice behaviour with a statistical interaction. We thought it likely that each motive would more strongly predict the outcome in the absence of the other (i.e., a cross-over interaction).

## METHOD

### Participants

One hundred and ninety-nine New Zealand university students from a mid-sized public university in the North Island of New Zealand (40 male, 149 female, 7 non-binary, and 3 did not report), whose age ranged from 17 to 57 ( $M = 19.8$  years;  $SD = 3.65$ ), made up the sample obtained in Terms 1 and 2 of 2022. The majority of participants reported that they were New Zealand European (74.4%), with a smaller number of individuals reporting they were Maori (11.6%), Pacific Islander (8.0%), Asian (6.5%), and individuals who reported their ethnicity as “other” (16.6%). These participants were targeted for recruitment using a specific sample who had participated in mass testing at the beginning of term: they completed the GERM measure at the beginning of the term, and they subsequently completed the single-occasion survey which contained the selection tasks about one month later. Ethical approval was obtained for this study from the host university, and informed consent was obtained from all participants prior to commencing the survey. Of these 199 participants, 107 were found to belong to the “normative” group (using guidelines provided by Bloore et al., 2020), 30 belonged to the “happiness aversion” group, and 48 belonged to the “non-regulating” group. Fourteen individuals could not be matched to GERM mass testing results, thus we cannot confirm the group to which they belonged. The follow-up survey was approximately 50 minutes long and distributed via email with the link to complete the survey online through Qualtrics.

Assuming statistical power at .80, a conventional significance level of .05 for as many as eight variables in a multiple partial correlation analysis (e.g., path model in SEM), a sample of 199 participants provided ample ability to identify medium effect sizes (Cohen, 1992). We intended to obtain a sample of 200 participants, and we stopped at that number, but one individual failed to complete more than 50% of the procedure, so they were omitted from analyses.

### Measures and Procedure

The survey began with the photo selection task, moved to the news headline selection task, and then finished with completion of the GERM measure.

*Photo Selection Task.* In our survey we presented a list of short labels that described hidden photos, e.g., ‘cute puppy’ and ‘starving boy’. Participants read the labels (36 in total), and then they were instructed to select only 12 images to view and rate. They then clicked on their choices one at a time, viewed the image that was unveiled, and rated it on a scale of 1-7 Likert scale of positivity-negativity.

We used images selected from the Emotional Stimuli OASIS database (Kurdi et al., 2017), because they had been previously normed on valence (on a sample of 822 participants). In order to present a set of photos balanced by valence, we used 12 positively valenced images, 12 neutrally valenced images, and 12 negatively valenced images (see image examples with label and valence in Figure 1).

Figure 1 Examples of positive, neutral, and negative images taken from the OASIS database

Positive Image	Neutral Image	Negative Image
 <p data-bbox="81 566 475 611">Cute Puppy – 6.49</p>	 <p data-bbox="499 566 874 611">Pile of Paperclips – 3.99</p>	 <p data-bbox="914 566 1249 611">Sad face – 2.69</p>

Participants viewed a list of randomly presented labels describing the images (see Appendix A in OSF for complete list) and were asked to “Please click on a maximum of 12 labels to see the corresponding image that interests you”. They then proceeded to view and rate the corresponding images one by one. Thus, the selection behaviour was based on the descriptive word labels of the images rather than the images themselves. Individuals received a total selection score which averaged the OASIS ratings of their selections. For example, if they chose Injured Dog (1.30), Cute Puppy (6.49), and Luxurious Beach (6.37), their average selection score would have been 4.72. Higher selection scores indicated more frequent choice of positive images, and lower scores indicated more frequent choice of negative images.

*News Headline Selection Task.* In order to multiply assess selection behaviour we also created a task of selecting and rating news headlines (see Appendix B in OSF). The news headline selection task was based on fake headlines that were created by the researchers. Similar to the photo selection task, we used 12 positively valenced headlines (e.g., “Olympian Valerie Adams honoured for triumphant shot-put career”), 12 negatively valenced headlines (e.g., “147 people dead in massacre”), and 12 neutrally valenced headlines (e.g., “Find out about the Council's pruning policies and procedures”). Since these stimuli were novel, we obtained norm information before the study commenced. We gave candidate headlines to 21 similarly-aged participants, who rated each headline on a scale from 1 = “extremely negative” to 7 = “extremely positive”. We deleted unclear exemplars until we had 12 clear examples of positive (average rating = 5.74), 12 neutral (average rating = 4.47), and 12 negative (average rating = 2.17) headlines. As with the photos, participants were asked to select 12 out of 36 total headlines that “interested” them. Each participant received a score averaging all of their selections’ normed scores. Higher scores indicated more frequent choice of positive headlines and lower scores indicated more frequent choice of negative headlines.

*GERM.* The General Emotion Regulation Measure was created to assess trait-based emotion motives in which individuals report their usual goals of trying to experience and trying to avoid experiencing a range of 24 distinct emotion terms (Bloore et al., 2020). The 24 emotion terms consisted of 12 positive emotions (joy, happiness, love, pride, gratitude, peacefulness, compassion, hope, relief, liking a person, enthusiasm, and determination) and 12 negative emotions (distress, regret, anxiety, contempt, fear, sadness, guilt, disgust, shame, disliking a person, anger, and frustration). The GERM queried participants as to “how often” they 1) *try* to experience, and 2) try to *avoid* experiencing each emotion term. Each of these two stem questions was displayed on separate pages followed by the emotion terms in a randomized order to prevent order bias. Two broad emotion motives were derived from these ratings: 1) pro-hedonic motives (Pro), i.e., how much individuals try to experience positive emotions (ExpPos) and how much individuals try to avoid experiencing negative emotions (AvdNeg), and 2) contra-hedonic motives (Contra), i.e., how much individuals try to experience negative emotions (ExpNeg) and how much individuals try to avoid experiencing positive emotions (AvdPos).

**Analytic Plan.** After conducting descriptive statistics, Hypothesis 1 was tested with a MANOVA using the three GERM profiles as the independent variable, and the two selection scores as the dependent variables. Hypothesis 2 was tested by constructing a latent variable path model in which pro-hedonic and contra-hedonic latent motives predicted a latent variable of ‘selection behaviour’, which was based on the photos and news headlines selection scores. Hypothesis 3 was tested with a latent variable moderation analysis.

## Transparency and Openness

On the OSF website (<https://osf.io/jynga>) we have posted survey questions, datasets, and syntax/models used for analyses. This project was not pre-registered.

## RESULTS

### Descriptive Statistics

Table 1 reports means, standard deviations, skewness, kurtosis, and correlations for measures of pro-hedonic and contra-hedonic motives, and behavioural selections of photos and news headlines. As expected, the means showed that individuals endorsed higher pro-hedonic motives ( $M = 3.72$ ) than contra-hedonic motives ( $M = 1.50$ ).

Table 1 Descriptive statistics of averaged scores of all variables.

	Pro	Contra	Photos	NewsHead
Pro		-.13	.17*	.10
Contra			-.15*	-.17*
Photos				.46**
NewsHead				
Mean	3.72	1.50	4.62	3.38
SD	0.70	0.42	1.22	1.18
Skewness	-0.90	2.18	-0.53	-0.53
Kurtosis	0.65	6.65	0.26	0.14

*Note.* Pro = Pro-hedonic motives (includes trying to experience positive emotions and trying to avoid experiencing negative emotions); Contra = Contra-hedonic motives (includes trying to experience negative emotions and trying to avoid experiencing positive emotions); Photos = photo selections; NewsHead = news headline selections. \* $p < .05$ ; \*\* $p < .001$ .  $N = 199$ .

Notably, pro-hedonic and contra-hedonic motives were not significantly correlated with each other ( $r(197) = -.13, p = .065$ ), which suggests that these valenced emotion motives were more orthogonal than diametrically opposed poles. As for behavioural outcomes, a significant moderate positive correlation was found between news headlines and photos,  $r(197) = .46, p < .001$ , suggesting that the two selection tasks significantly shared variance but also contained some unique variance. Relevant to the hypotheses, a significant positive relationship was noted between pro-hedonic motives and photo selection behaviour,  $r(197) = .17, p < .05$ , and significant negative relationships were found between contra-hedonic emotion motives and both photo and news headline selections,  $rs(197) = -.15$  and  $-.17, ps < .05$ .

In terms of distributional characteristics, all variables yielded normal distributions except for contra-hedonic motives, which was expected to yield a low mean with a narrow range of values near the floor of the distribution. The mean of contra-hedonic emotion motive scores was low (1.50 on a scale from 1 to 5), and the distribution was positively skewed. The skewness estimate was high (2.18) as was the kurtosis estimate (6.65). However, no transformation was performed on this variable because it would preclude using this variable on the same metric with all of the other variables in the dataset, a critical feature of the present design. Nevertheless, results based on contra-hedonic motives should be viewed with caution.

### Differences in Outcomes by GERM Profiles: Hypothesis 1

A one-way MANOVA was computed based on the three GERM profiles as the independent variable on the two selection behaviours (photos and news headlines) separately. The initial univariate results were non-significant, but a planned weighted follow-up test for news headlines identified a statistically significant weighted contrast ( $F(1, 196) = 4.11, p = .044$ ) with the predicted contrast weights: normative = 1, non-regulating = 0, and happiness aversion = -1. The corresponding planned contrast test for photo selection

yielded a non-significant result ( $p = .24$ ). This pattern of results (see Table 2) provides scant support for Hypothesis 1, i.e., selection behaviour slightly varied (yielded a small effect size) in the predicted fashion among the three GERM profiles for news headline selection but not for photo selection.

Table 2 Selection behaviours by GERM profiles.

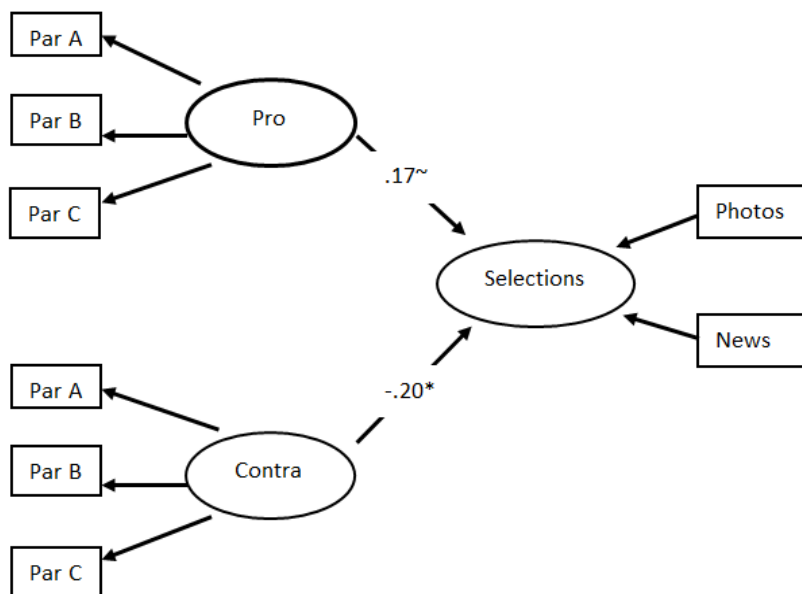
Task	GERM Profiles		
	Normative	Non-regulating	Happiness Aversion
Photo selections	4.68 (1.20)	4.59 (1.17)	4.38 (1.35)
News headline selections	3.45 (1.11)	3.42 (1.35)	2.97 (1.20)

Note. Numerical values are means (with standard deviations in parentheses). Scores ranged from 1 to 7.

**Predictions of Selection Behaviour by Pro-hedonic and Contra-hedonic GERM Motives: Hypothesis 2**

Figure 2 depicts the path model between emotion motives and selection behaviours. To simplify analyses and description of results, individual items for the two pro-hedonic motives (ExpPos and AvdNeg) were used to create three parcels to represent the latent construct of pro-hedonic motives. These 12 items were systematically allocated to create averages for the three parcels (combining every 4<sup>th</sup> item). Similarly, items for the two contra-hedonic motives (ExpNeg and AvdPos) were used to create three parcels to represent the latent construct of contra-hedonic motives. The latent dependent variable was informed by the two indicators of photos and new headlines selection behaviours. By using parcels, we expected to obtain a good fitting measurement model (Little et al., 2002), which would then yield optimal estimates of associations unclouded by redundant correlated error variance (Hoyle, 2014). The model was constructed and tested in Amos Ver. 28 (Arbuckle, 2019), and the model yielded a good-fitting measurement model,  $\chi^2/df = 2.53$ , RMR = .015, CFI = .97, RMSEA = .088. Factor loadings for the two emotion motives ranged between .80 and .94, and the two selection loadings were .71 (photos) and .65 (news headlines).

Figure 2 Latent variable path model illustrating the relationships between valenced emotion motives and selection behaviour.



Note. Coefficients are standardised regression coefficients. Par = parcel; Pro = pro-hedonic motives; Contra = contra-hedonic motives. \* $p < .05$ ; ~ $p < .10$ .

As predicted in Hypothesis 2, the variable of pro-hedonic motives was found to positively (but marginally) predict selection mean scores ( $\beta = .17, p = .07$ ). As predicted also, the variable of contra-hedonic motives was found to be a simultaneous significant negative predictor of selection mean scores ( $\beta = -.20, p = .038$ ). Together they explained 5.5% of the variance in the outcome. Thus, statistical support was obtained for

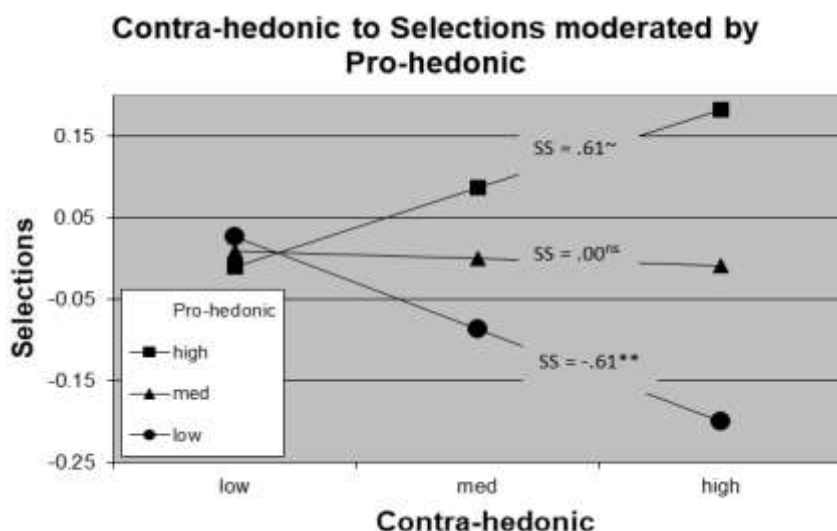
Hypothesis 1, although the path from pro-hedonic motives to the outcome did not achieve the conventional significance level. It is notable that both pro-hedonic and contra-hedonic motives simultaneously explained unique variance in the outcome variable; across the whole sample, choice behaviour was significantly predicted by the additive model of simultaneously avoiding experiencing negative stimuli and trying to experience positive stimuli.

As a follow-up analysis, guided by the observations of Walle and Dukes (2023), we examined whether additional illumination about the role of emotion valence could be provided by assessing the predictive power of individual emotion terms (e.g., sadness) instead of the PA and NA groupings specified by the GERM. A forward step-wise regression was performed on all 24 individual emotion terms (12 positive and 12 negative) on selection behaviour, and it identified only two significant predictors: love ( $\beta = .27, p < .001$ ) and pride ( $\beta = -.15, p = .042$ ). Given that the raw correlations of these emotions with selection behaviour were both positive ( $r_{s(199)} = .31$  and  $.27$  respectively, both  $p_s < .001$ ), we are clearly observing a suppression effect. The Cronbach's alpha for "trying to experience" 12 positive emotion terms was .92, clearly indicating great psychometric convergence of the constituent indicators. Although Walle and Dukes are correct that much heterogeneity in appraisals of positive and negative emotions exists (see also Roseman et al., 1990), in this particular case of predicting selection behaviour, the results suggest that clearer and more theoretically interpretable results are obtained by assessing aspirations toward and away from PA and NA as categories than by examining particular positive and negative emotions.

**Did Contra-hedonic Motives Moderate the Relationship of Pro-hedonic Motives on Selections? (Hypothesis 3)**

A further analysis was performed to determine whether the interaction term of pro-hedonic X contra-hedonic motives would explain significant unique variance above and beyond the additive model depicted in Figure 2. We conducted a latent variable moderation analysis, as described by (Regorz, 2022), and performed with *lavaan* and *semTools* in R. Model fit was found to be good: CFI = .99, RMSEA = .04, SRMR = .05. The simultaneous regression analysis showed that pro-hedonic motives was identified as a significant main effect predictor,  $B = .12, SE = .05, p = .011$ , but contra-hedonic motives was not,  $B = -.02, SE = .08, p = .802$ . Notably, the latent interaction term was also found to be a significant predictor,  $B = .36, SE = .12, p = .003$ , and it explained 5% unique variance above the two main effects (see Figure 3), for a total  $R^2$  value of .10. Simple slopes analyses revealed that only low levels of pro-hedonic motives (-1SD) yielded a significant slope ( $B = -.61, SE = .06, p < .001$ ), whereas that medium (mean) and high (+1SD) levels did not yield significant slopes. (Note that although the B coefficient for high pro-hedonic motives slope was similar in size to the low pro-hedonic motives slope, the SE was much larger, yielding a marginally significant result,  $p = .059$ , for the pro-hedonic slope).

Figure 3 Latent variable moderation: Pro-hedonic motives moderated the relationship of contra-hedonic motives on selections.



The pattern approximates the predicted cross-over interaction, which qualifies the findings obtained from the main effects path model. The simple slope results suggest that individuals reporting high contra-hedonic motives were more likely to select negative stimuli *only in the absence of pro-hedonic motives*. So, to combine these two results, we would offer that: 1) pro-hedonic motives (for everyone) predicted selection of more positive stimuli; and 2) contra-hedonic motives predicted selection of more negative stimuli only in people lacking pro-hedonic motives.

## DISCUSSION

The current study was designed to determine whether emotion motives would at least partially explain selection behaviour. Gross (1998b) has proposed that many people proactively choose particular situations and not others in order to regulate their emotions. We reasoned that people asked to view and rate photos and news headlines would, at least to a discernible extent, be motivated to select stimuli that would up-regulate their preferred emotion motives and down-regulate their disfavoured emotion motives. To address this question, we employed the assessment paradigm of the General Emotion Regulation Measure (Bloore et al., 2020) which is designed to assess aspirational motives for future valenced emotions.

Hypothesis 1 stated our prediction that the normative group identified by Bloore et al. (2020) would select a higher ratio of positive stimuli than the happiness aversion group, and the non-regulating group would fall in between the two extremes. A planned contrast ANOVA yielded a significant effect for news headlines consistent with our prediction, but the corresponding contrast for photo selections was non-significant. Thus, Hypothesis 1 was partially and, admittedly, weakly supported: GERM profiles did not predict behaviour well.

Hypothesis 2 stipulated that pro-hedonic motives would positively, whereas contra-hedonic motives would negatively, predict selection behaviour. The path model supported this prediction by identifying a marginally significant positive relationship from pro-hedonic motives to selection behaviours and a significant negative relationship between contra-hedonic motives and selection behaviours. The follow-up latent variable moderation analysis (Hypothesis 3) showed that the interaction term of pro-hedonic X contra-hedonic motives explained a significant amount of additional variance in our outcome variable. In essence: 1) everybody in the sample manifested a positive relationship between pro-hedonic motives and positive selection behaviour; whereas 2) only individuals reporting low pro-hedonic motives in conjunction with high contra-hedonic motives behaviourally selected more negative stimuli. These results suggest that valenced emotion motives solely and in combination with each other explain significant variance in the important real world behaviour of image and news story selection.

We believe that our findings support and extend findings from studies on the emotion regulation strategy of situation selection. Vujović and Urry (2018) has showed that individuals select situations based on valenced affect, opting for high-arousal positive contexts while avoiding or terminating high-arousal negative ones, and Livingstone and Isaacowitz (2015) found evidence that older individuals exhibit a greater inclination towards pro-hedonic motives compared to younger individuals in selection behaviour. Together these studies suggest that individual differences in stable background variables (e.g., age or, in the present case, emotion motives) might induce individuals to up- or down-regulate positive or negative emotions through situation selection. The present study seems to be the first in the literature to show that valenced emotion motives exert a predictive function in explaining selection behaviour. Our findings suggest that not all individuals seek out positive stimuli and shun negative stimuli; some individuals are motivated to pursue negative stimuli while avoiding positive ones (see also Jose et al., 2024, 2025; Millgram et al., 2020).

## Limitations and Future Directions

The majority of the current sample were first year psychology students, female, of European descent, and in their early 20s, which limits our ability to generalise our results. The present dataset was derived from a single occasion survey; longitudinal or daily diary studies will more sensitively capture dynamics among emotion motives and ER strategy selection. We did not assess whether viewing particular photos and news headlines manifested a discernible change in valenced mood. Data were obtained from self-reports, which can be biased by social desirability bias. An experimental study that measures affect before, during, and after stimulus

viewing could determine whether emotion motives exert a significant impact on selection behaviour, and whether these choices, in turn, cause desired modulations in changing mood over time.

Another limitation of this study is that valenced emotion motives are likely not the sole (or even the dominant) factor influencing stimuli selection. Our final model explained about 10% of the variance in selection behaviour, which although not trivial, is not large either: other factors clearly operate in guiding selection behaviour.

Future research should employ a more broadly representative sample (including a broader age-range and diverse educational/employment statuses), and use a more diverse range of methods such as observation and multiple informants. Further, stimuli that are more realistic (e.g., video clips or more detailed scenarios) would increase ecological validity. And last, the GERM measure needs to be applied in diverse cultures around the world to support the purported construct validity of the scale.

Possibly the most important future direction suggested by these results is the potential value offered by the GERM to capture nuanced levels of both pro- and contra-hedonic emotion motives in cases where researchers or clinicians desire to know more sensitively the relative levels of motivations for positive and negative emotions. The scale empirically captures the critical phase of emotion regulation “identification” described by Gross (2015) in his Extended Process Model of ER. He has theoretically argued that people may desire to up- or down-regulate both positive and negative emotions in different contexts, and the GERM measure will now allow researchers in many disciplines to more sensitively and in a balanced fashion assess the degree of the pro- and contra-hedonic motives that are instantiated in this critical first phase of ER.

## CONCLUSIONS

The present study addressed the question of whether valenced emotion motives would significantly predict selection behaviour. We found: 1) small differences in selection behaviours among the three GERM profiles, 2) a significant relationship from pro-hedonic motives to selection behaviours, and 3) an interaction effect which suggests that contra-hedonic motives predict selection of stimuli promising the up-regulation of negative emotions only in people lacking pro-hedonic motives. These results suggest that the field of emotion regulation could usefully employ emotion motives as an explanatory mechanism for the selection of particular emotion regulation strategies in the service of achieving particular valenced emotional states.

## Statements and Declarations

The authors declare no competing interests. Data, measures, and syntax are available at <https://osf.io/jynga>. Ethical approval was obtained before data were collected, and full informed consent was obtained from all participants. Authors’ contributions: PJ, the corresponding author, was the lead investigator. He designed the study, selected and developed measures, and organised the data collection. He took the lead in data analysis and manuscript writing. JB, a post-graduate student, collected the data assisted with data cleaning and analyses, and contributed to writing of the manuscript.

## ACKNOWLEDGEMENTS

We report no funding sources for this research. Ethical approval was provided by Victoria University of Wellington’s Human Ethics Committee (Behavioural implications of emotion motives; #2021/HE299300). PJ is the corresponding author ([paul.jose@vuw.ac.nz](mailto:paul.jose@vuw.ac.nz)), and his ORCID # is 0000-0002-3104-1871.

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