Affective Forecasting as a Resource for Situation Selection Across the Lifespan

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Abstract

The resources for situation selection, an emotion regulation (ER) strategy in which one chooses situations based on their emotional potential, remain unknown. Study 1 concerned whether affective forecasting, or the ability to predict how situations will make one feel, is associated with situation selection. Indeed, participants successful at forecasting their arousal during a stress test freely selected more negative relative to neutral situations. Study 2 was designed to replicate and extended this finding by comparing younger and older adults. Participants in Study 2 successful at arousal forecasting were less likely to choose positive relative to positive and neutral situations, and those more successful at positive forecasting were less likely to choose negative relative to negative and neutral situations. No age differences were found. Taken together, the results of these studies tepidly suggest that affective forecasting is a resource for situation selection that can be utilized similarly across the lifespan.

Keywords: situation selection, affective forecasting, SOC-ER, aging

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Emotion regulation is essential to daily functioning. Nevertheless, many individuals struggle to control their emotions. There are many ER strategies one can use, depending on the context in which the emotional event occurs (Sheppes, Scheibe, Suri, & Gross, 2011). A process model of ER explains the five time-dependent strategies one can use to regulate an emotional experience during the emotion-generative cycle: situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross, 1998). Although popular psychotherapies like cognitive behavioral therapy (CBT) presume that changing how one thinks about an emotional response is the most effective ER strategy, a recent theoretical framework suggests that ER success depends upon selecting particular ER strategies, optimizing these different emotion regulatory strategies in response to particular emotion-eliciting events, and compensating with different ER strategies in the face of ER failure (SOC-ER; Urry & Gross, 2010).

Perhaps the most important theoretical contribution of SOC-ER is its suggestion that individuals select and optimize particular ER strategies based on the resources available to them. Resources help make a specific emotion regulation strategy possible, and can be either internal (e.g., working memory capacity, perspective taking) or external (e.g., social support; Opitz, Gross, & Urry, 2012; Urry & Gross, 2010). While little is known about how specific resources contribute to ER success, some ER strategies might require fewer resources than others (Opitz, Gross, & Urry, 2012). Insofar as older adults might use ER strategies that require fewer, or at least less cognitively taxing, resources, this might explain why people generally have greater well-being later in life (Urry & Gross, 2010). In this respect, situation selection might be a particularly useful ER strategy.

Situation Selection

Situation selection, an ER strategy in which one picks situations in order to evoke particular emotions, is the first opportunity an individual has to engage in ER (Gross, 1998; Urry & Gross, 2010). It may require fewer cognitive resources than other strategies, and is also beneficial in that it permits individuals to proactively manage an emotion before it even begins (Gross & Thompson, 2007). Unfortunately, little attention has been paid to situation selection within the emotion regulation literature. Indeed, very few studies to date have focused on situation selection at all (Rovenpor, Skogsberg, and Isaacowitz, 2013; Vujović, Opitz, Birk, & Urry, 2014; Livingstone & Isaacowitz, 2015). The scant research that has been conducted on situation-targeted emotion regulation suggests that older adults typically choose to spend less time interacting with negative stimuli than younger adults (e.g., Livingstone & Isaacowitz, 2015), but that the cognitive effort it takes for them to engage negative stimuli varies based on how capable they generally are at regulating their emotions (specifically, high trait cognitive reappraisal ability; Li, Fung, & Isaacowitz, 2011). Furthermore, more recent work suggests that, when participants are given free rein to attend to stimuli varying in valence, younger and older adults deploy their attention towards similar proportions of valenced stimuli (Isaacowitz, Livingstone, Harris, & Marcotte, 2015). Although age might not directly affect situation selection behaviors, the interaction between age and self-efficacy and general control beliefs *does* seem to affect situation selection. More specifically, older adults with high self-efficacy and general control beliefs tend to choose to watch and read fewer negative stimuli, whereas younger adults with high self-efficacy and general control beliefs tend to choose to watch and read more negative stimuli (Rovenpor et al., 2013). Moreover, it's been demonstrated that individuals tend to be motivated to terminate the situation they're in when they're upset by high-arousal (relative

to low-arousal) negative stimuli, as well as when they're bored by low-arousal (relative to high-arousal) neutral stimuli (Vujović et al., 2014). Consequently, while limited research on situation selection does exist, its necessary resources still remain unknown.

While the resources for the ER strategy of situation selection remain untested, one possible resource is affective forecasting ability (Urry & Gross, 2010). Affective forecasting refers to the ability to predict how a given situation will make one feel before actually experiencing the situation (see Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). If individuals are good at predicting their emotions they might use their forecasting ability as a resource for selecting situations that help them achieve their emotional goals.

Affective Forecasting

People tend to be poor at predicting how they will feel (see Gilbert, 2007 for a review). Individuals tend to either overestimate or underestimate how good or how bad they will feel after particular events. For instance, individuals tend to be less upset than they forecast they would be (e.g., Sieff, Dawes, & Loewenstein, 1999). While one might be inclined to believe experience would make people wiser, affective forecasts for familiar events are neither easier to make nor more accurate than they would be for novel events (Ayton, Pott, & Elwakili, 2007). However, while individuals do tend to overestimate how good or bad they will feel (this is known as absolute forecasting—or the difference between actual and predicted affect), they are pretty good at relative forecasting (or the correlation between actual and predicted affect), such that those individuals who believe they will be the most affected actually are the most affected (Mathieu & Gosling, 2012).

So long as people have emotional goals, however, affective forecasting should theoretically be useful. For instance, individuals might be motivated to feel calm and happy

before they start up a conversation with a distant colleague with whom they haven't talked in some time. Generally, having goals, like feeling calm and happy before speaking to a colleague, affords individuals realization of what they want and motivates them to achieve it (Mischel, Cantor, & Feldman, 1996). However, if individuals who value particular goals, like feeling happy, have unrealistic expectations, their failure to achieve their goals might lead to feelings like disappointment that undermine the feelings they were trying to achieve in the first place (cf. Mauss, Tamir, Anderson, and Savino, 2011; Schooler, Ariely, & Loewenstein, 2003). Within this example, if an individual forecasted that they would feel ecstatic upon seeing a distant colleague they would likely be overestimating their emotional state; it seems unlikely that they would feel ecstatic upon reuniting with a colleague of some acquaintance, relative to how they would feel if they saw a close friend or family member. Their forecasting failure would likely make them feel worse than they might have felt if they had made the more realistic forecast of feeling calm and happy. Thus, individuals more successful at predicting how particular events will make them feel might feel better than people who lack this ability.

Most empirical studies concerning affective forecasting have focused on individuals' affective predictions for relatively significant life events. (e.g., loss of employment; Troy, Wilhelm, Shallcross, & Mauss, 2010). Very few studies examine forecasting within more quotidian, mundane contexts (e.g., Nielsen, Knutson, & Carstensen, 2008; Pearmana, Andreoletti, & Isaacowitz, 2010), such as in the example of an individual chatting with a colleague after a brief absence. One study attempted to study affective forecasting in a more commonplace context by having participants forecast how they would feel while completing a reaction-timed task to cued targets to gain or avoid losing money, and then observing their actual and recalled affect (Nielsen et al., 2008). Though the attempt was admirable, the task's

ecological validity leaves something to be desired; after all, people rarely engage in decontextualized monetary decision-making in the real world. As such, developing experimental paradigms that tap into routine uses of affective forecasting should be a top priority.

Aging

Another potentially exciting route for research is examining whether affective forecasting ability varies across the lifespan. It's been proposed that older adults might be better at some types of ER than younger adults, and that this difference might be resource driven (Urry & Gross, 2010). It's also been demonstrated that older adults are more successful at affective forecasting than younger adults (Nielsen, Knutson, & Carstensen, 2008), at least at predicting their arousal. Maybe a link exists between these two things, such that older adults are better at using situation selection *because* they have more of the necessary resource, namely ability to accurately forecast experienced arousal. Indeed, recent work suggests older adults might benefit from utilizing situation selection more than other ER strategies because it can help them dampen undesirable physiological arousal (Charles, 2010), or even prevent it before it arises. So, if older adults are good at forecasting when they might experience unwanted arousal (Nielsen et al., 2008), an association between these two constructs seems plausible. If such a link were found, it would not only explicate how ER tactics vary with age but would also underscore how individual differences in resource availability might indeed implicate ER strategy choice.

Gaps

The situation selection component of the SOC-ER framework remains largely untested. Although individuals' affective forecasting ability (e.g., Nielsen, Knutson, & Carstensen, 2008; Pearman, Andreoletti, & Isaacowitz, 2010) and situation selection behaviors (e.g., Rovenpor et al., 2013; Livingstone & Isaacowitz, 2015) have been individually compared before, the author is

unaware of any studies examining whether affective forecasting ability affects the situations one chooses to experience and one's subsequent self-reported mood state, nor how the relation between these constructs varies across the lifespan.

In this thesis, I present two studies designed to 1) ascertain whether affective forecasting ability is a resource for situation selection, and 2) whether this relation varies across the lifespan. The findings and limitations of Study 1 motivated the design of Study 2.

Study 1

The aim of Study 1 was to determine whether affective forecasting ability is a resource for situation selection. Participants completed both an affective forecasting task, where they predicted how they would feel completing a speech and out loud mental arithmetic, and a situation selection task, where they were given the opportunity to watch a series of positive, negative, and neutral videos that varied on arousal. Experimenters collected participants' predicted and actual affect during the affective forecasting task in order to obtain an absolute difference of individuals' forecasting success, whereby approaching zero indicated high forecasting success and deviating from zero indicated increasingly low forecasting success. The number of positive, negative, and neutral videos participants chose to watch during the situation selection task served as proxies for their situation selection behaviors.

Based on prior research it was assumed that there would be individual differences in people's affective forecasting ability, such that some individuals would be relatively successful at predicting their affect while other individuals would be relatively unsuccessful at predicting their affect. It was hypothesized that individuals who are more successful at affective forecasting would be associated with making emotion-driven decisions in the situation selection task, as evidenced by the kinds of videos they chose to view.

Method

Participants

Participants ($N = 61$) were recruited from the Tufts University participant recruitment pool (Sona Systems, Ltd.) and from the surrounding community via TuftsLife (http://www.tuftslife.com), a Tufts University-sponsored campus advertisement website. Of the 61 participants recruited, 53 completed the experiment and are included in the final sample (refer to Table 1 for additional demographic information). Individuals received either course credit or monetary compensation ($15/hour) for their participation. The Social, Behavioral, and Educational Research Institutional Review Board at Tufts University and the U.S. Army Human Research Protections Office approved of the study protocol in its entirety. All participants provided written informed consent prior to participating.

Materials

Mood ratings. The mood ratings self-report measure is a 12-item self-report measure that measures positive, negative, and arousing mood states (see Table 2). It is an in-house measure that was adapted from previous work (Tamir, John, Srivastava, & Gross, 2007). Using this measure, participants were asked to rate how they were currently feeling, how they forecasted they would feel, and how they wanted to feel, across a variety of items at multiple time points. An example positive mood item is "happy, pleased, contented", an example negative mood item is "sad, depressed, down", and an example arousal item is "active, alert, keyed up". Participants rated each item on a continuous Likert scale (1 = *not very much*, 7 = *very much*). The composite positive, negative, and arousal subscores were derived from the items' face validity and via principal components analysis. The latter analyses involved extraction based on eigenvalues greater than 1 and ultimately resulted in three extracted components that mapped

onto positivity, negativity, and arousal. Table 2 depicts the *M*, *SD*, and Cronbach's alpha for each subscore.

Affective forecasting task. Since few studies have examined affective forecasting in the context of commonplace events, we sought to develop a new paradigm that allows one to examine how affective forecasting is associated with emotion regulation success (see Figure 2). The paradigm needed to be able to provide a context in which participants could make affective forecasts about a specific laboratory event before they actually experienced it. For this reason, a modified version of the Trier Social Stress Test (TSST; Kirschbaum, Pirke, & Hellhammer, 1993) was created. Participants were first presented with brief yet detailed descriptions of the two traditional tasks of the TSST. The two tasks concern giving a job interview talk and orally conducting mental arithmetic, respectively. Since college students and young professionals tend to be regularly exposed to public speaking and other social-evaluative threat tasks the TSST represents an ecologically valid way to tap into participants' affective forecasting ability for commonplace events. For the interview speech task, participants read the following:

> Later in this session we will conduct a test of your verbal communication ability. You will be given 3 minutes to prepare a 5-minute interview talk for a job position in a relevant area of interest. The content of your speech, your body language, and the persuasiveness of your argument will be evaluated by the lab's researchers.

Relatedly, for the mental arithmetic task, participants read the following:

> Later in this session we will have you perform a task to verify your alertness. The task is quite easy and most people don't have a problem with it. You will count out loud backwards from 2,223 in increments of 17. You will complete

this task without using a pen and paper. If you miscalculate we will point out your mistake, and you will have to start over again.

These two descriptions were meant to provide participants with sufficient information about the tasks for them to make affective forecasts about how they thought they would feel while completing them without actually having to first expose them to the tasks themselves.

After reading each description, participants were asked to contemplate how they would feel during the task in question for a period of thirty seconds. After the deliberation period, participants made predictions of how positively, negatively, and aroused they would feel using the aforementioned mood ratings. Participants completed this process twice, separately for each of the two tasks. Next, participants completed a crossword puzzle for a period of five minutes. The crossword puzzle's duration was meant to ensure that enough time had lapsed between participants' affective forecasts and their actual emotional responses to the two TSST tasks so that memory for their forecasts exerted less influence on their actual mood ratings. After finishing the crossword, participants completed both Trier tasks described to them earlier in the study in a randomized order. Participants were told that experimenters would watch their speech and carefully and rate their verbal and nonverbal performance, and verbally corrected their math performance mistakes. Each task was therefore completed under threat of social evaluation from the experimenters, which was meant to induce anxiety in the participant. Participants' self-reported positivity, negativity, and arousal were again recorded after each of the tasks on the same mood Likert scale metric.

Because affective forecasting is bidirectional (e.g., can be unsuccessful by forecasting that one will be either more upset or less upset than one actually is), the absolute value of the difference between participants' actual and forecasted affect served as our measure of forecasting

success, whereby individuals whose absolute difference score approached zero had high forecasting success and individuals whose absolute difference score deviated from zero had low forecasting success. Participants' affective forecasting success scores ranged from 0-6, based on the mood ratings they made during the task.

Situation selection task. To assess situation selection behaviors, a modified version of the Affective Environment (AE) task (Isaacowitz et al., 2015; Rovenpor et al., 2013) was used. While the task was originally designed as a system in which participants could interact with a series of positive, negative, and neutral web articles, it has since evolved into a task that allows participants to interact with a wide variety of positive, negative, and neutral film clips of varying arousal. This task, in both of its iterations, permits one to ascertain how individuals select situations, as indexed by the multimedia they choose to interact with.

First, participants were asked to rate their desired emotional responding approximately 10 minutes later (i.e., immediately after the situation selection task) before they were given the task parameters. The same mood ratings used in the affective forecasting task were again used here. Participants were then told that they would have the opportunity to view a series of videos, and were subsequently directed to an E-Prime home screen with thumbnails briefly depicting positive, neutral, and negative multimedia pieces of either low or high arousal they can choose to view (see Figure 3). The positive videos concerned an African charity and a blooper reel, the neutral videos concerned Vitamin D deficiency and instructions to a card trick, and the negative videos concerned casualties of the Iraqi war and domestic violence. The valence order of these items was counterbalanced across participants. For a fixed ten-minute interval of time participants were allowed to watch whichever videos they wished, based on the valence and

arousal information provided. Importantly, participants were told that should they wish to stop viewing a video at any time they could press the spacebar to be redirected to the home screen.

After ten minutes participants again provided self-reported mood ratings. The number of positive, negative, and neutral items participants chose, as well as the ratio of positive-to-neutral and negative-to-neutral videos, served as an index of situation selection behavior. The ratios were created in part because there were few videos of each valence participants could choose to view (0-2). Consequently, the more interesting question became not how many videos of each valence participants watched, but rather how many valenced (positive or negative) videos relative to neutral videos participants watched. Individuals receiving higher scores thus exhibited a stronger preference to select emotional situations with greater relative frequency than neutral situations. However, not all participants watched a neutral video; since one cannot divide by zero, participants who did not watch a neutral video have neither positive-to-neutral nor negative-to-neutral scores.

Peripheral Physiology. Peripheral physiological data were obtained using a MP150 system (Biopac, Goleta, CA) and processed using ANSLAB (Wilhelm & Peyk, 2005). It was collected with the primary goal of assessing whether or not the stress induction used in the situation selection task was affective.

Electrocardiography (ECG). Electrocardiography was used to measure heart rate (HR), which is dually innervated by the sympathetic and parasympathetic branches of the autonomic nervous system. In event-related paradigms involving passive viewing of unpleasant pictures, HR exhibits an initial, parasympathetically-mediated deceleration (Bradley & Lang, 2007). Two disposable Ag/AgCl electrodes pre-gelled with 7% chloride gel (1 cm circular contact area) were placed under the left and right collar bones on the chest after swabbing with an alcohol prep pad

and then gently debrading using an electrode prep pad. ECG was acquired continuously at 1000 Hz.

Offline, the ECG signal was downsampled to 400 Hz and bandpass-filtered from .5 to 40 Hz. Interbeat interval (IBI) series were created by identifying R-spikes using automated ANSLAB algorithms. R-spikes that were not detected automatically, thus leading to an erroneously long period between successive R-spikes, were marked for inclusion by hand. Similarly, R-spikes that were identified incorrectly, thus leading to an erroneously short period between successive R-spikes, were removed by hand. Following such artifact correction, the IBI series was converted to heart rate in beats per minute. Heart rate data were decimated to 10 Hz and then smoothed with a 1-s prior moving average filter.

Skin conductance level (SCL). Skin conductance was selected as a pure measure of sympathetic activation of the autonomic nervous system. Two disposable Ag/AgCl electrodes pre-gelled with 0.5% chloride isotonic gel (1 cm circular contact area) were attached to the distal phalanges of the index and middle fingers on the non-dominant hand. One electrode was attached to the back of the neck to serve as a ground. SCL was recorded with DC coupling and constant voltage electrode excitation at 31.25 Hz (sensitivity = .7 nS). Offline, the SCL data were smoothed with a 1 Hz low-pass filter, decimated to 10 Hz.

Corrugator electromyography. Corrugator electromyography was selected as an index of facial expressive behavior, even that which is not overtly observable. It is sensitive to stimulus valence, exhibiting greater activity in response to unpleasant stimuli and lower activity in response to pleasant stimuli (Bradley & Lang, 2007). Two 4-mm Ag/AgCl electrodes were placed in bipolar configuration over the left eye per Fridlund and Cacioppo (1986). Corrugator electromyography was sampled at 2000 Hz and bandpass-filtered online (5 Hz to 3 kHz; 60-Hz

notch filter on). Offline, data were resampled to 400 Hz, rectified and smoothed with a 16-Hz low-pass filter, decimated to 4 Hz, and smoothed with a 1-s prior moving average filter.

Additional materials. A number of post-task questionnaires and trait questionnaires were also collected throughout the course of the study. These measures were not relevant to the central hypotheses, and as such their analyses will not be reported within this paper. Please refer to the appendix for more specific methodological information about each of these measures. Indices of eye tracking were also included in this study. Unfortunately, due to technical error, the data were not saved properly and are unusable.

Procedure

After consenting to participate in the study, physiological sensors were applied to the subject. Research assistants also aided the participant in calibrating the eye tracker, which necessitated ensuring the participant was approximately 60 cm away from the screen. Next, a neutral baseline task was administered through E-Prime software (Psychology Software Tools, Pittsburgh, PA) to ascertain state levels of emotional responding (see Figure 1). Participants were told to simply sit quietly and observe a fixation cross for a period of two minutes. Following the two-minute interval participants then completed a variety of mood ratings on Likert scales concerning how positively, negatively, and aroused they felt (1 = *not at all*, 7 = *very much*).

Once the baseline task was completed participants completed the affective forecasting task and the situation selection task outlined in the materials section in a counterbalanced order. Participants completed a series of post-task questionnaires after each task. After completing the affective forecasting task, the situation selection task, and their respective questionnaires, participants completed a battery of trait questionnaires. Participants then watched a comedic video clip (specifically, a compilation of scenes from NBC's *The Office*) to help alleviate any

temporary stress, anxiety, and negativity that may have been induced during the laboratory session. Finally, participants were unhooked from the physiological sensors, verbally debriefed, and given a paper copy of the debriefing form.

Results

Preliminary Analyses

Effect of forecasting on post-task emotion ratings. Before this study was underway, a pilot study was conducted to see whether making forecasts affected participants' post-task emotion ratings in the affective forecasting task. It was important to ensure that forecasting one's mood didn't contaminate individuals' ratings of their actual post-task mood. Eight pilot participants were randomly assigned to either complete the affective forecasting task as it is discussed in this paper (e.g., making forecasts of how they thought they would feel during the speech and math tasks after reading short descriptions of each task) or to complete the affective forecasting task without providing forecasts (e.g., read the descriptions of the speech and math tasks and then, instead of providing ratings for how they forecasted they would feel, skipped straight to the crossword puzzle). See Table 3 for means and standard deviations of participants' post-speech and post-math emotion ratings.

A series of independent samples t-tests were run to test the hypothesis that forecasting would result in different self-reported post-task affective responding. There was no difference in actual self-reported affective responding based on whether or not participants made predictions during the early stages of the affective forecasting task. ($p > 0.1$ for all ratings). Although the pilot study sample size is quite small, the cautious interpretation of these findings is that participants' self-reported actual affect will not be affected by their affective forecasts of how

they think they will feel during the TSST. Consequently, all 53 participants in the actual study provided affective forecasting ratings before completing the two components of the TSST.

TSST manipulation check. To ascertain whether the TSST successfully induced anxiety in participants, a series of paired-sampled t-tests were run to ascertain whether there were mean differences between self-reported baseline affect, self-reported affective responding during the TSST, and physiological responding (ECG, SCL, corrugator) during baseline and the TSST. Results indicated there was a significant increase in self-reported negative emotion during both the speech, $t(51) = -5.39$, $p < .001$, and the math task, $t(51) = -6.45$, $p < .001$ (See Table 2). Relatedly, there was a significant increase in self-reported arousal during both the speech, $t(51) = -6.96$, $p < .001$, and the math task, $t(51) = -5.38$, $p < .001$. There was likewise a significant decrease in self-reported positive emotion during both the speech, $t(51) = 6.32$, $p < .001$, and the math task, $t(51) = 9.37$, $p < .001$. Although there were no differences in corrugator muscle activation between baseline and the TSST, there were significant increases in heart rate during both the speech, $t(46) = -9.50$, $p < .001$, and the math task, $t(45) = -5.57$, $p < .001$, as well as in skin conductance level during both the speech, $t(44) = -4.40$, $p < .001$, and the math task, $t(43) = -4.13$, $p < .001$. There is no TSST control condition, but, taken in aggregate, these findings are consistent with the idea that the TSST increased anxiety during both of the individual components of the task as intended. Since the speech and math tasks both led to relatively similar increases in negative emotion, increases in arousal, and decreases in positive emotion, all subsequent analyses consequently concern how successful individuals were at predicting their affect during the TSST overall, as opposed to how successful they were at predicting their affect during each of the two tasks separately.

Affective forecasting. From observing frequency distributions, it seemed visually that there was individual variation in how successful individuals were at absolutely forecasting how positively (M = .56, SD = .56), how negatively (M = .51, SD = .54), and how aroused (M = .56, SD = .48) they would feel during the TSST. However, the data were non-normally distributed, such that the absolute difference in participants' forecasted negativity had skewness of 2.96 (SE = .33) and kurtosis of 12.75 (SE = .64), the absolute difference in participants' forecasted positivity had skewness of 2.31 (SE = .33) and kurtosis of 6.67 (SE = .64), and the absolute difference in participants' forecasted arousal had skewness of 1.05 (SE = .33) and kurtosis of .33 (SE = .64). Shapiro-Wilks tests confirmed that the data were not sampled from a normal distribution (all ps < .01). Consequently, one cannot assume normality of these data. For the sake of brevity, only parametric statistics will be reported; however, the same pattern of results was found using nonparametric tests.

Affective forecasts were analyzed via one-sample t-tests against a test value of 0, which would indicate perfect forecasting success (e.g., no difference between predicted affect and actual affect). Analyses revealed that, mean affective forecasts deviated significantly from 0 when predicting how positively, $t(52) = 7.32$, $p < .001$, how negatively, $t(52) = 6.86$, $p < .001$, and how aroused, $t(52) = 8.47$, $p < .001$, they ultimately would feel during the two tasks of the TSST. Participants were therefore relatively unsuccessful at forecasting both the valence and arousal of their actual emotional responding following the administration of the TSST.

Situation selection. While there were individual differences in how many of each type of video participants watched, overall participants tended to select several of the videos (see Table 4). Again, however, the data were not normally distributed. The number of positive videos participants watched had skewness -.94 (SE = .33) and kurtosis -.44 (SE = .64), the number of

negative videos participants watched had skewness -.76 (*SE* = .33) and kurtosis -.66 (*SE* = .64), and the number of neutral videos participants watched had skewness -.94 (*SE* = .33) and kurtosis -.44 (*SE* = .64). Similarly, participants' positive-to-neutral video watch ratio had skewness .42 (*SE* = .33) and kurtosis of -.54 (*SE* = .64) and their negative-to-neutral video watch ratio had skewness .56 (*SE* = .33) and kurtosis of -.32 (*SE* = .64). Shapiro-Wilks analyses again confirmed that the data were not normally distributed (all *p*s <.01). Again, parametric and nonparametric tests yielded similar patterns of results, but only parametric analyses will be reported here.

Participants watched more neutral than positive, $t(52) = -2.11$, $p < .05$ and negative, $t(52) = -2.18$, $p < .01$, videos. This suggests that, as a sample, participants did not gravitate towards emotional material within the situation selection task, be it positively or negatively valenced.

Hypothesis Testing

Is absolute affective forecasting success related to participants' situation selection behaviors? A series of bivariate Pearson product-moment correlations were conducted to examine the link between participants' absolute forecasting success during the affective forecasting task and the number of positive, neutral, and negative videos participants watched, as well as between participants' absolute affective forecasting success and the ratios of positive-to-neutral and negative-to-neutral videos participants chose to watch during the situation selection task (see Table 5). It was hypothesized that participants' absolute forecasting success would be related to their situation selection behaviors; based on the preliminary analyses, it was speculated that absolute forecasting success might be associated with selecting more emotional (relative to neutral) videos. Recall that lower forecasting success scores indicate higher forecasting success. Thus, participants who were relatively successful at forecasting their arousal during the affective forecasting task were more likely to select negative (relative to neutral) videos during the

situation selection task, $r = -.36$, $p < .01$. Participants who were relatively successful at forecasting how negatively they would feel during the affective forecasting task were less likely to select positive (relative to neutral) videos during the situation selection task, $r = -.32$, $p = .02$. However, no other correlations between absolute affective forecasting success and situation selection were significant.

Do affective forecasts of arousal uniquely relate to participants' situation selection behaviors over and above positive and negative affective forecasts? To examine the unique effects of successfully forecasting positivity, negativity, and arousal in the affective forecasting task on the videos participants select during the situation selection task two regressions were run with the forecasting success of positive, negative, and aroused affect entered as simultaneous predictors and the positive-to-neutral or negative-to-neutral (see Table 6) ratios of videos watched in the affective environment as the dependent variable.

Analyses revealed that arousal forecasting success uniquely predicts negative-to-neutral videos watched in the situation selection task, $\beta = -.44$, $t(52) = -2.32$, $p = .02$ (see Figure 4). There were no other significant associations. In sum, these findings suggest that there might be a unique effect of successfully forecasting arousal on selecting more negative (relative to neutral) content.

Secondary Analyses

Does gender affect the relation between forecasting and situation selection? While there were no *a priori* hypotheses concerning the role that gender might play in influencing the association between affective forecasting and situation selection, there is evidence to suggest that men and women experience emotions differently (e.g., Fujita, Diener, & Sandvik, 1991). To assuage concerns that gender was driving some of the effects that emerged from the parametric

analyses a preliminary post-hoc analysis was undertaken. A multivariate regression was run with gender (0 = male, 1 = female) entered as a categorical predictor variable, the interactions between gender and affective forecasting success (gender*positive forecasting success, gender*negative forecasting success, gender*arousal forecasting success) as continuous predictor variables, and situation selection behaviors (positive-to-neutral videos, negative-to-neutral videos) as continuous outcome variables. There was no main effect of gender on either positive-to-neutral videos watched, β = -.01, t(52) = -.09, p = .93, nor on negative-to-neutral videos watched, β = -.12, t(52) = -.86, p = .39. Moreover, the effect of absolute arousal forecasting success during the TSST on negative-to-neutral videos selected, though slightly weakened by the addition of gender, remained significant, β = -.33, t(52) = -2.26, p = .03. There were no other interactive effects of gender and affective forecasting success on situation selection behaviors, including the association between arousal forecasting success during the TSST and the ratio of positive-to-neutral videos selected (ps > .1). Based on these findings, there seems to be no main or interactive effects of gender on subsequent situation selection behaviors.

Does the relation between affective forecasting and situation selection hold using non-parametric tests? The dependent variables of interest all violated the assumptions of normality. Linear regression tends to be quite robust to violations of normality, but it was still useful to see whether the relation between arousal forecasting success and situation selection held when the data was analyzed using a non-parametric test. Using Spearman's rank order correlation coefficients, the link between absolute arousal forecasting success and selecting negative (relative to neutral) videos in the AE still exists, r_s(52) = -.29, p = .04. There is no association between absolute arousal forecasting success and selecting positive (relative to neutral) videos in the AE (p > .1). This non-parametric finding is consistent with the parametric

one indicating a specific link between absolute arousal forecasting success and selecting more negative than neutral videos in the situation selection task.

Discussion

The purpose of this study was to ascertain whether individuals who are more successful at affective forecasting would be more likely to select situations based on their emotional potential. While results indicated that individuals were generally unsuccessful at predicting how positively, how negatively, and how aroused they would feel during the affective forecasting task, individuals who were relatively successful at forecasting their arousal were more likely to select negative (relative to neutral) videos in the situation selection task than individuals who were relatively unsuccessful at forecasting arousal. This specificity, whereby arousal-forecasting success was associated with watching more negative (relative to neutral) videos, was not expected on an *a priori* basis. Since higher arousal has been shown to lead people to use distraction, a disengaging ER strategy, over cognitive reappraisal, an engaging ER strategy (Sheppes, Scheibe, Suri, Radu, Blechert, & Gross, 2014), it's somewhat surprising that successful arousal forecasting would be associated with choosing to watch more negative-relative-to-neutral videos.

Consistent with previous work, individuals do seem to be generally unsuccessful at forecasting how they're going to feel in a given situation, across both valence and arousal domains. Since this study's affective forecasts were rooted in more commonplace, immediate situations than are typically reported in the literature (e.g., how one will feel when one gets tenure, gets married, etc.), one can perhaps conclude that people are unsuccessful at predicting their affect in any situation, not just in the face of relatively major, distal life events. Why people are generally unsuccessful at affective forecasting in the short term as well as the long

term remains unclear, but it seems to be a relatively difficult ability to master. This study also supports previous findings suggesting that arousal might play an especially important role in affective forecasts (e.g., Nielsen et al., 2008). The absence of gender differences in the effect of affective forecasting is likewise consistent with prior work.

Participants' affective forecasting of their arousal was associated with the ratio of negative-to-neutral videos they selected, but not with the ratio of positive-to-neutral videos they watched. Given younger adults' bias towards negative information (see Murphy & Isaacowitz, 2008 for a review) it may be the case that younger individuals who are relatively good at forecasting their arousal are more likely to engage with multimedia of a valence that reflect the negativity bias. Relatedly, the relation between arousal forecasting and situation selection was only apparent when looking at the ratio of negative-to-neutral videos selected, not just looking at the total number of negative videos selected. As was briefly alluded to before, there likely weren't enough videos participants could watch within each valence (0-2) to make the number of videos selected within each valence category meaningful. The ratio of negative-to-neutral videos may afford more meaningful variation.

This study was a creative attempt to begin exploring uncharted territory concerning the relation between affective forecasting and situation selection. Both tasks that were created or modified within this study seem like promising means by which one can index quotidian measures of affective forecasting and situation selection behaviors, respectively.

Despite this study's novelty, it was not without limitations. Firstly, the modified tasks utilized to index both affective forecasting and situation selection have not been used exactly as they were described in this study. It may be that the tasks are not yet maximally optimized to operationally define affective forecasting and situation selection for use in this context. Within

the affective forecasting task, perhaps there was insufficient time between when participants made forecasts of their affect and when they self-reported their actual affect during the two tasks that comprise the TSST. During, the situation selection task, participants were only able to choose up to two videos within each valence category. One might find greater variation in participants' situation selection behaviors if they had a wider range of videos to choose from. The task also allowed participants to view thumbnails of the videos they could choose to watch, as well as to stop watching videos whenever they wished to stop viewing them. Consequently, the task may not have captured situation selection in its purest form. Since ending a video might, arguably, be more of an example of situation modification, a related ER strategy that may rely upon entirely different resources than situation selection (Urry & Gross, 2010; cf. Vujović et al., 2014), and viewing different affective elements of the thumbnails could be construed as attentional deployment, yet another ER strategy relying on different resources than either situation selection or situation modification (Urry & Gross, 2010), future work should attempt to more clearly disentangle situation selection from situation modification and attentional deployment. At the very least, preventing people from ending videos they watch should help ensure that everyone gets similar doses of the situations they select.

Study 1 likewise did not allow for an accurate test of how successful participants were at achieving their desired affect in the situation selection task. Participants were asked to rate how they wanted to feel in ten minutes before being made aware of the situation selection task, but in the absence of any information about what they were going to do next; perhaps they would have responded differently had they known they were going to next be watching a series of videos. In order to better assess whether participants are motivated to choose certain emotional situations over others, ratings of participants' global ideal affect, or how they *generally* want to feel, should

be assessed. Since participants weren't forced to interact with any particular videos in the situation selection task it stands to reason that they were more driven to select specific videos based on their general emotional preferences than they were by how they wanted to feel after an arbitrary ten-minute interval. Furthermore, whether situation selection behaviors lead to putatively adaptive outcomes, such as decreased overall experience of negative emotion or lower depressive symptomology, was not tested within this study. Assessing psychological health would've allowed one to test this empirical question.

Another major limitation of Study 1 was that the study's participants were relatively homogenous, in that they were mostly college undergraduates. It is imperative that future research involves a more diverse sample, especially considering the potential effect of aging on the association between affective forecasting and situation selection. Finally, despite the items' face validity and their extractions during principal components analyses, the reliability of ratings of arousal were low, probably largely due to the low number of items comprising that subscale (two). Future work should use mood rating scales that maximize reliability and, thus, the ability to test hypothesized relations between affective forecasting and situation selection. The goal of Study 2 was to replicate and extend the results of Study 1 in part by addressing Study 1's limitations.

Study 2

Study 1 suggested that affective forecasting ability is related to situation selection behaviors. Nevertheless, the unexpected specificity of the effect of forecasting arousal on negative relative to neutral situation selection casts doubt on the reliability of the finding. We thus designed another study to see whether these findings are replicable, and if so, extendable.

One of the primary issues of Study 1 was the potentially insufficient delay between when participants forecasted their affect and when they made self-reported ratings of their actual affect. Although the task was designed in an attempt to minimize the effect of forecasted affect on actual affect, and the pilot study preceding Study 1 indeed suggested forecasting affect did not affect ratings of actual affect, there was still a concern that there was not enough temporal separation between participants' ratings of forecasted and actual affect. Consequently, participants in Study 2 completed an affective forecasting task that minimized demand characteristics by asking them to make forecasts of their actual affect one week prior to their laboratory session.

Another potential issue with Study 1 was that there might not have been a sufficient number of video clips to choose from in the situation selection task. Study 2 therefore included twice as many videos as Study 1, four each of positively-, negatively-, and neutrally-valenced videos. These videos again varied on arousal. Like Study 1, participants still had free rein to interact with whichever videos they so chose; however, participants could no longer opt out of watching a given video once they selected it. Situation selection behaviors were more purely captured by this modified paradigm, relative to the previous iteration of the task, in which situation modification or, at the very least, unequal doses of situation selection were also permissible. Participants also didn't have thumbnails of each video; instead, participants chose situations based solely on labels that signaled valence and arousal information. This minimized the likelihood that participants used attentional deployment as an ER strategy during the situation selection component of the task. Additionally, all participants watched the same set of videos at the end of the situation selection task for which they made forecasts during the affective

forecasting task one week prior. Participants' actual affect in response to these videos was obtained immediately after each one was viewed.

Unfortunately, neither measures of participants' trait emotional preferences nor their psychological health were administered in Study 1, which means that how participants' desired affect influences the association between affective forecasting ability and situation selection, as well as how participants' affective forecasting success and situation selection behaviors are associated with psychological health outcomes, remains unknown. Thus, indices of participants' ideal affect were collected at the beginning of Study 2, to see whether their emotional preferences were associated with the extent to which they successfully forecasted their affect and, in turn, selected particular emotional situations. In order to assess whether choosing certain situations over others actually was associated with adaptive outcomes, psychological health outcome measures were added to Study 2. They were administered immediately after the situation selection task. Assessing psychological health at this juncture sheds light on whether particular situation selection behaviors are associated with adaptive psychological health profiles.

Finally, to assess whether the association between affective forecasting ability and situation selection varies across the lifespan, Study 2 involved the recruitment of both younger and older adults. Taken together, the specificity of the Study 1 findings and the age-related differences in arousal forecasting found in previous work (Nielsen et al, 2008) suggest that older adults might be particularly good at using situation selection to achieve desirable psychological health outcomes. Indeed, while findings in this domain are somewhat mixed, there's evidence that younger adults might prefer to interact with negative material more than older adults, and perhaps even that older adults might prefer to interact with positive material more than younger

adults (Mather & Carstensen, 2005; Murphy & Isaacowitz, 2008). Study 2 made possible comparisons between the two age groups on these metrics.

Despite the potential for age differences in affective forecasting success, it was hypothesized that all participants who successfully forecasted their arousal, regardless of age, would select videos within the situation selection task more based on their potential to elicit emotions. However, *which* videos participants chose to interact with was hypothesized to be differentially affected by the emotional affordances that vary from one person to the next: some people might use forecasting to put themselves in hedonic situations, others might use forecasting to engage with emotional material more generally, and still others might approach only certain types of emotional content. It seems plausible that emotional affordances would largely vary as a function of age. Consistent with Study 1, we hypothesized that younger adults successful at forecasting their arousal should select more negative (relative to neutral) videos in the situation selection task, whereas older adults successful at forecasting their arousal should select more positive (relative to neutral) videos in the situation selection task. Exploratory analyses will also be conducted concerning how affective forecasting and situation selection are associated with ideal affect, actual affect and psychological health.

Method

Participants

Participants aged 18-30 (N = 56) and 65-77 (N = 53) years were recruited from the greater Boston metro area. Due to technical issues, 54 younger and 50 older adults were retained for analyses (see Table 7 for additional demographic information about each sample). They either received course credit or monetary compensation ($5 for day 1 and $15/hour for day 7) for participating. The Social, Behavioral, and Educational Research Institutional Review Board at

Tufts University and the U.S. Army Human Research Protections Office approved of the study protocol in its entirety. All participants provided online informed consent prior to participating on day 1, and assented to their continued participation on day 7.

Materials and Procedures

Mood ratings. Since the arousal ratings in Study 1 were low in reliability, a different measure was used to collect actual mood ratings throughout Study 2. These ratings were adopted from the Evaluative Space Grid (Larsen, Norris, McGraw, Hawkley, & Cacioppo, 2009). This model asks participants how positively and how negatively they feel about a given stimulus, while also allowing for a calculated assessment of emotional intensity. The adapted ESG asked participants to rate the extent to which they think they will feel *and* actually feel positively and negatively (1 = *not at all*, 5 = *extremely*); scores of both forecasted and actual arousal can be obtained by taking a mean aggregate of the two ratings. While this measure uses fewer indices of arousal than Study 1, it's possible that the more implicit assessment of arousal using this method will be less subject to response bias. Participants filled out this questionnaire at multiple time points throughout Study 2.

Affective forecasting task. Despite the usefulness of the affective forecasting task in Study 1, using the modified TSST paradigm was not tenable in Study 2, as older adults are not affected by the TSST in the same way that younger adults are (Kudielka, Buske-Kirschbaum, Hellhammer, & Kirschbaum, 2004). In an attempt to create a task that would be similarly effective for both younger and older adults, affective forecasting ability was instead assessed by asking participants to make affective forecasts for three video clips based on a less-than-ten-word description: one neutral clip, one positive video clip, and one negative video clip. Participants were asked to predict how positively and negatively they thought they would

hypothetically feel while watching each of those videos one week ahead of their laboratory session. Unlike in Study 1, participants were not told that they would actually be watching these three videos later on, but they still made forecasts about the situations well before they were exposed to them. Overall, this approach was ideal because it 1) mitigated the likelihood that there was insufficient time between when participants forecasted their affect and when they reported on their actual affect, and 2) allowed for a more naturalistic assessment of how participants thought they would hypothetically feel in the relevant situations.

To help further ensure the impartiality of the forecasts, participants also made forecasts about a series of commonplace stressors that very well could have happened to them during the course of the week leading up to the laboratory session. These lure items were derived from the Survey of Recent Life Experiences scale (Kohn & Macdonald, 1992). This measure assesses prototypical life stressors. Participants were asked to indicate whether they had experienced a given stressor over the course of the past month (1 = *not all part of my life*, 4 = *very much part of my life*). For the forecasting task, participants were contacted a week before their laboratory session and asked to indicate how positively and negatively they thought they'd feel were they to experience those stressors in the future, including watching the three video clips. The descriptions participants read before making their forecasts for the positive, negative, and neutral video clips were "watching a video clip about a cute bear cub playing with a man", "watching a video clip about the reenactment of a real human shark attack", and "watching a video clip about what would hypothetically happen to the world without oxygen", respectively. Analyses concerning the lure items will not be presented within this document.

At the end of the situation selection task in the laboratory session, which will be described in more detail below, participants watched the neutral clip, and then the positive and

negative video clips in randomized order. They then rated how positively and how negatively they actually felt while watching each of those videos. Upon completion of the laboratory session participants were asked to complete the original Survey of Recent Life Experiences scale to assess whether they actually experienced the stressors within the week between their forecasts and their laboratory session. So, in addition to having participants state whether the events listed actually happened to them, their actual positive and negative feelings about those events were also retrospectively collected. However, those findings are not relevant to the central hypotheses, and as such they will not be discussed further within this document.

Because affective forecasting is bidirectional (e.g., can be unsuccessful by forecasting that one will be either more upset or less upset than one actually is), the operationalization of forecasting success remained unchanged from Study 1. Participants' affective forecasting success scores ranged from 0-4, based on the mood ratings they made during the task. Cronbach's alphas for how successful participants were at forecasting how positively, negatively, and aroused they would be while watching each of the three videos were .33, -.09, and .66, respectively.

Situation selection task. In order to rectify some of the limitations of the Study 1 version of the situation selection task, as well as to make the videos more comparably emotive for both younger and older adults, another modified version of the Affective Environment (AE) task (Rovenpor et al., 2013; Isaacowitz et al., 2015) was used. The primary changes concerned adding twice as many videos to the task (totaling 12), and removing the thumbnail information in favor of having participants just select their situations based on labels that provided valence and arousal information. Importantly, these videos were matched on valence and arousal across younger and older adults in a previous pilot study.

Like in Study 1, participants were asked to rate their desired emotional state in approximately 25-30 minutes before they were given the task parameters. The same actual affect measure used in the affective forecasting task for Study 2 was again used here. Participants were then told that they would have carte blanche to watch a series of videos, and were subsequently directed to an E-Prime home screen. In place of the thumbnails, participants were only given information concerning whether 1) the multimedia pieces were positive, neutral, and negative, 2) the multimedia pieces were low or high in arousal, and 3) how many videos remained for selection within each category (see Figure 6). The valence order of these items was counterbalanced across participants within each age group, as in Study 1. Participants were allowed to select whichever 6 of the 12 videos they were so inclined to view, based on the valence and arousal information provided; importantly, participants were told that there goal was to choose videos that would make them feel how they wanted to feel.

Unlike in Study 1, Study 2 participants were not able to quit out of a given video to be redirected to the home screen. However, participants were explicitly told that they had to select 6 of the 12 videos. Once participants committed to watching a certain video, they watched it in its entirety before they were redirected to the home screen. A series of counters were displayed on the home screen so that participants knew how many videos were left within each category and overall within the task. After viewing each video, participants rated how positively and negatively they felt using the same ESG items alluded to earlier. Participants were given extensive instructions about how to complete this task, using a lengthy training paradigm and follow-up Q&A, to make sure that they understood the task.

After watching 6 of the 12 videos, all participants were told that they were done with the present task, but that they had three more videos left to watch. They then all watched the neutral,

positive, and negative videos about which they made affective forecasts the week before their laboratory session. They then made ratings of their actual affect at the end of each video. Like in Study 1, ratio of positive-to-neutral and negative-to-neutral videos selected served as indexes of their situation selection behavior. Participants who did not watch any neutral videos do not have scores for both the positive-to-neutral and the negative-to-neutral variables.

Emotional preferences and experiences. In order to assess both which particular emotions people generally *want* to feel and the extent to which they *actually* feel them, the Affect Valuation Index (AVI; Tsai, Knutson, & Fung, 2006) was administered to participants. The adapted AVI is a 30-emotion measure that asks participants to rate the extent to which they ideally want to feel, think they will feel, *and* actually feel 30 different affective states (e.g., euphoric, fearful, aroused) over the course of the week (1 = *never*, 5 = *all the time*). They filled out this questionnaire online after they made their affective forecasts on day 1.

Psychological health outcomes. In an attempt to further illuminate individual-difference relations between affective forecasting ability, situation selection behavior, and psychological health, measures of participants' depressive and anxiety symptoms were administered at various time points throughout Study 2, as described in the paragraphs below.

Depressive symptoms. To measure depressive symptoms the Beck Depressive Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) was used. The BDI is a 21-item measure of various depressive syptoms (0 = *no symptoms*, 3 = *high symptomatology*). Though one's score on this measure does not in and of itself constitute a clinical diagnosis of Major Depressive Disorder (MDD), it does serve as a suitable proxy for assessing general depressive symptomatology within the population (Beck, Steer, & Carbin, 1988). The scale asks participants to report about their symptoms of sadness, guilt, irritation, and so forth. One item concerns suicidiality, but it

was omitted from this study, as the scale here is meant to serve as an individual difference measure of psychological health, not as a means of assessing MDD. The BDI-II was administered to participants in the laboratory after the affective forecasting task on day 7.

Anxiety symptoms. To assess general anxiolytic symptoms the trait version of the State Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Grös, Antony, Sims, & McCabe, 2007) was administered. The STICSA is a 21-item measure that assesses the extent to which one worries (e.g., "I think that the worst will happen") and feels physically anxious (e.g., "My heart beats fast"). Participants rated the extent to which they generally feel each of these symptoms (1 = *not at all*, 4 = *very much so*) after the affective forecasting task on day 7.

Additional materials. As in Study 1, several other measures, including post-task questionnaires, trait questionnaires, eye tracking, and indices of peripheral physiology were also collected throughout the course of the study. They are not relevant to the central hypotheses, and as such will not be analyzed or reported on further herein. Please refer to the appendix for more specific methodological information about each of the measures that have not already been discussed.

Procedure

After responding with interest to study advertisements, all participants received the link to a Qualtrics survey by email. In that survey, they provided online informed consent and made ratings of how they *forecast* they would feel while watching the target neutral, positive, and negative video clips, which they would ultimately watch after the situation selection task in the lab. They were also given a list of four words at the end of the survey and told to explicitly commit them to memory.

One week later, participants came into the laboratory. Experimenters applied electrocardiography (ECG), skin conductance (SCL), and electromyography (corrugator) sensors to participants after they reaffirmed their assent to participate. Experimenters subsequently aided the participant in calibrating the eye tracker, which, as in Study 1, necessitated ensuring the participant was approximately 60 cm away from the screen. Next, the same neutral baseline task used in Study 1 was administered through E-Prime software (Psychology Software Tools, Pittsburgh, PA) to ascertain state levels of emotional responding (see Figure 5). As a reminder, participants were told to simply sit quietly and observe a fixation cross for a period of two minutes. Following the two-minute interval participants indicated both how positively and how negatively they felt in the present moment (1 = *not at all*, 5 = *extremely*).

Once the baseline task was completed, participants completed the situation selection task, which allowed them to view the six of twelve videos they chose. After watching those six videos, participants then watched the target forecast videos, and provided ratings of their actual affect at the end of each video. They also indicated whether or not the other events they made forecasts about on Day 1 actually happened to them during the week and rated each event's impact on them. Participants completed a series of post-task questionnaires after this task, which included a free recall of the four words they were asked to remember at the end of day 1, the psychological health outcome measures, and a battery of trait questionnaires. Next, participants watched a comedic video clip (specifically, a compilation of scenes from NBC's *The Office*) to help alleviate any temporary stress, anxiety, and negativity that may have been induced during the laboratory session. Finally, the experimenters unhooked participants from the physiological sensors, verbally debriefed them, and gave them a paper copy of the debriefing form.

Results

Preliminary Analyses

Affective forecasting

Were participants successful at forecasting how they would feel? To ascertain whether participants were successful at forecasting how they would feel (positive, negative, aroused) during the three target videos, a series of one-sample t-tests was conducted against a test value of 0. Using the |actual affect– forecasted affect| equation, a test value of 0 would be indicative of perfect forecasting success (refer to Table 8 for means of each of these results by group).

Analyses revealed that mean affective forecasts deviated significantly from 0 when predicting how negatively, $t(103) = 23.38$, $p < .001$, how positively, $t(103) = 25.94$, $p < .001$, and how aroused, $t(103) = 21.91$, $p < .001$, they would feel while watching the positive, negative, and neutral videos. Participants were therefore relatively unsuccessful at forecasting how positively, negatively, and aroused they would feel.

Situation selection

What videos did participants choose to watch? A breakdown of the number of videos participants watched within each video type can be found in Table 8. As a whole, participants watched about equivalent numbers of negative and neutral videos, $t(103) = 1.34$, $p > .1$, but participants watched more positive than neutral videos, $t(103) = -10.98$, $p < .001$. An exploratory 3x2 ANOVA revealed that younger and older adults watched the same number of positive, negative, and neutral videos (ps > .3). This suggests that, regardless of age, participants approached the situation selection task with a hedonic goal, at least in terms of the number of positive (relative to neutral) videos they chose.

Hypothesis Testing

Is affective forecasting success related to participants' situation selection behaviors? To assess whether affective forecasting success was associated with situation selection behaviors, multivariate regression analyses were conducted with participants' affective forecasting success (positive, negative, arousal) entered as continuous independent factors that potentially explain participants' continuous situation selection behaviors (positive-to-neutral, negative-to-neural). The results of these multivariate regression analyses can be found in Table 11. There was a significant association between affective forecasting success and the ratio of positive-to-neutral videos watched in the situation selection task; however, none of the forecasting variables were uniquely associated with the ratio (all *p*s > .1). There was no association between affective forecasting success and the ratio of negative-to-neutral videos watched in the situation selection task. Thus, contrary to the hypotheses, there was no association between affective forecasting success and situation selection behavior in Study 2. Please refer to Table 10 for a series of bivariate Pearson product-moment correlations conducted examining the associations between all of the predictor and criterion variables used in these multiple regression analyses.

Do younger and older adults differ in their affective forecasting ability and subsequent situation selection behaviors? To evaluate whether younger and older adults' affective forecasting ability and situation selection behaviors differed as a function of their age a hierarchical multivariate regression was conducted with affective forecasting ability (positive, negative, arousal) entered as a step 1 continuous predictor, age (1 = old, 0 = young) entered as a step 2 categorical predictor, their interactions (positive forecasting success*age, negative forecasting success*age, and arousal forecasting success*age) entered as continuous step 3 predictors and situation selection behaviors (positive-to-neutral, negative-to-neutral) as

continuous outcome variables. The association between the set of three affective forecasting variables and the ratio of positive-to-neutral videos watched is significant in the first model, R^2 = .087, $F(3, 91) = 2.9$, $p = .04$, but none of the affective forecasting variables uniquely contributed to this effect (ps > .1). Entering age and the forecasting*age interactions into the step 2 and step 3 models rendered the associations between forecasting success and situation selection behaviors insignificant (ps > .05). There were no associations between age, affective forecasting ability, and their interactions on the ratio of negative-to-neutral videos watched (all ps > .1). This contradicts one of the primary hypotheses of Study 2: namely, that younger adults successful at forecasting their arousal would select more negative (relative to neutral) videos in the situation selection task, whereas older adults successful at forecasting their arousal would select more positive (relative to neutral) videos in the situation selection task. These variables therefore provide no indication that the association between affective forecasting ability and situation selection behaviors ultimately varies with age.

Exploratory Analyses

Do emotional preferences moderate the association between affective forecasting success and subsequent situation selection behaviors? To evaluate whether younger and older adults' affective forecasting ability and situation selection behaviors differed as a function of their desired affect, a multivariate regression was conducted with ideal affect, affective forecasting ability (positive, negative, arousal), and their interactions (ideal affect*positive forecasting success, ideal affect*negative forecasting success, and ideal affect*arousal forecasting success) entered as continuous predictors and situation selection behaviors (positive, negative, neutral, positive-to-neutral, negative-to-neutral) entered as continuous outcome variables. Because of group differences in the extent to which participants endorsed wanting to

experience high-arousal negative affect (see Table 8), only ideal high-arousal negative affect was analyzed. No associations between affective forecasting success, ideal affect, and situation selection behaviors were detected (*p*s > .1), indicating that the extent to which participants generally wanted to experience high-arousal negative affect did not influence the association between participants' affective forecasting success and their situation selection behaviors.

Does actual emotion experience impact affective forecasting success and subsequent situation selection behaviors? To evaluate whether younger and older adults' affective forecasting ability and situation selection behaviors differed as a function of their experienced affect (as reported using the actual affect battery of the AVI) a multivariate regression was conducted with actual affect, affective forecasting ability (positive, negative, arousal), and their interactions (actual affect*positive forecasting success, actual affect*negative forecasting success, and actual affect*arousal forecasting success) entered as continuous predictors and situation selection behaviors (positive-to-neutral, negative-to-neutral) entered as continuous outcome variables. Again, because of group differences in the extent to which participants endorsed actually experiencing high-arousal negative affect, only actual high-arousal negative affect was analyzed. There was a main effect of actual high-arousal negative affect on the ratio of positive-to-neutral videos watched, such that participants with greater actual high-arousal negative affect watched fewer positive (relative to neutral) videos, $\beta = -.88$, $t(103) = -2.61$, $p = .01$. No other significant associations were found between affective forecasting success, actual affect, and their interactions on situation selection behaviors.

Are affective forecasting ability and situation selection behaviors associated with psychological health outcomes? To test whether both affective forecasting and situation

selection were associated with participants' psychological health outcomes two sets of multivariate regression were utilized. Each will be described in detail below.

The first set of multivariate regressions were comprised of affective forecasting success (positive, negative, arousal) as an independent factor that potentially explained participants' depressive symptoms (day 7) and anxiety symptoms (day 7; refer to Table 9 for information about participants' psychological health scores). There was no association between affective forecasting success and depressive symptoms ($p > .1$). Though only marginally significant, there is an association between affective forecasting success and cognitive symptoms, $R^2 = .06$, $F(3, 100) = 2.19$, $p = .09$. More specifically, arousal forecasting success is associated with fewer cognitive anxiety symptoms, $\beta = .35$, $t(103) = 2.41$, $p = .02$, while negative forecasting success is associated with increased cognitive anxiety symptoms, $\beta = -.29$, $t(103) = -2.21$, $p = .03$.

The second set of multivariate regressions were comprised of situation selection behaviors (positive-to-neutral videos watched, negative-to-neutral videos watched) as an independent factor that potentially explained participants' depressive symptoms (day 7) and anxiety symptoms (day 7). There were no associations between situation selection behaviors and any of the psychological health variables (all ps $> .1$)

Taken together, these findings suggest that negative forecasting success might be associated with increased cognitive anxiety symptoms, whereas arousal forecasting success might be associated with decreased cognitive anxiety symptoms. Situation selection behaviors do not seem to be associated with symptoms of either depression or anxiety.

Does the association between affective forecasting success and situation selection change when one rethinks situation selection behaviors? In an effort to include participants excluded from the original ratio analyses because they watched 0 videos we created variables

instead pitting positive relative to positive and neutral videos and negative relative to negative and neutral videos. All of the study's participants have scores for these new ratios, and as such can now be included in the analyses concerning the relation between affective forecasting and situation selection. A number of associations between affective forecasting success and situation selection were detected with this new conceptualization; the largest one, though, concerned the zero-order correlation between arousal forecasting success and the ratio of positive to positive and neutral videos watched (see Table 12a). As this association was so strong, we decided to run another multivariate regression analysis with affective forecasting success (positive, negative, arousal) entered as continuous predictors and the new situation selection ratios (positive to positive and neutral, negative to negative and neutral) entered as continuous outcome variables to see whether arousal forecasting explains unique variance in the ratio of positive to positive and neutral videos selected. Indeed, the association between affective forecasting success and the ratio of positive to positive and neutral videos watched was significant (see Table 13a); moreover, arousal forecasting somewhat explained unique variance in the criterion variable. Participants more successful at forecasting their arousal were less likely to select positive relative to positive and neutral videos during the situation selection task (see Figure 7). The association between affective forecasting success and the ratio of negative to negative and neutral videos watched was marginally significant, and positive forecasting success somewhat explained unique variance in the criterion variable (see Table 13a). Thus, changing the way we conceptualized situation selection behaviors allowed us to get a more complete picture of how arousal forecasting—and, to a lesser degree, positive forecasting—might be associated with situation selection.

To evaluate whether younger and older adults' affective forecasting ability and the new conceptualization of situation selection behaviors differed as a function of their age in Study 2 a hierarchical multivariate regression was conducted with affective forecasting ability (positive, negative, arousal) entered as a step 1 continuous predictor, age (1 = old, 0 = young) entered as a step 2 categorical predictor, their interactions (positive forecasting success*age, negative forecasting success*age, and arousal forecasting success*age) entered as continuous step 3 predictors and situation selection behaviors (positive divided by positive plus neutral, negative divided by negative plus neutral) as continuous outcome variables. The association between affective forecasting success, age, and their interactions on the ratio of positive to positive plus neutral videos watched was significant in each model, with the last model ultimately explaining the most variance (model 3 R^2 = .154, total change in R^2 = .031, all *p*s < .05). The change in R^2 for the three affective forecasting success variables entered at step 1 was significant, $F(3, 100) = 4.66$, $p < .01$; the change in R^2 from there on out was not (*p*s > .1). In the final model, only positive forecasting success was marginally associated with the ratio of positive to positive plus neutral videos watched, β=.28, $t(103) = 1.84$, $p = .07$. No other variables uniquely predicted the number of positive to positive plus neutral videos watched, in any of the models. These exploratory analyses therefore ultimately suggest that age does not play a unique role in the association between affective forecasting success and situation selection behaviors.

Since the divide-by-zero situation selection ratio issue was also present in Study 1, we decided to re-run the main multivariate regressions concerning the association between affective forecasting success and situation selection using the two new situation selection ratio variables we created in Study 2. There were a few significant (albeit weaker) zero-order correlations between these variables in Study 1. Similarly to Study 2, there seems to be a significant positive

association between arousal forecasting success and selecting positive relative to positive and neutral videos during the situation selection task (see Table 12b). When conducting multivariate regressions with affective forecasting success (positive, negative, neutral) entered as continuous predictors and situation selection behaviors (positive to positive and neutral, negative to negative and neutral) entered as continuous outcome variables, the grouped three affective forecasting success scores are significantly associated with the ratio of positive to positive and neutral videos selected (see Table 13b). Yet its negative forecasting success, not arousal forecasting success, which uniquely predicts variance in the criterion variable. Contrary to the initial Study 1 finings, there was no significant association between affective forecasting success and the ratio of negative relative to negative and neutral videos selected. Thus, although affective forecasting is still associated with situation selection, these precise findings call some interpretations of Study 1 into question.

Discussion

Study 2 was meant to replicate the results of Study 1, by assessing whether affective forecasting ability was associated with situation selection, but also to extend the results of Study 1, by discerning whether the association between affective forecasting ability and situation selection behaviors varied as a function of age. Tests of the original hypothesis showed that the set of the three affective forecasting success variables were associated with situation selection, but situation selection was not uniquely affected by one particular type of forecasting. Age was not associated with affective forecasting success and situation selection behaviors. Exploratory analyses suggested that the set of the three affective forecasting success variables were more strongly associated with two different measures of situation selection—the ratio of positive to positive and neutral videos watched, and, to a lesser extent, the ratio of negative to negative and

neutral videos watched. The findings further suggest that affective forecasting—particularly arousal and positive forecasting—might be uniquely linked to the ratio of positive to positive and neutral and negative and negative to neutral situation selection behaviors, respectively. However, the hypothesized age differences in the association between affective forecasting and situation selection choices did not pan out.

The Study 2 design necessitated an extensive overhaul of both the materials and procedures utilized in Study 1. The longitudinal nature of the study, the increased variance in the situation selection task, accounting for participants' global emotional preferences, and the decision to examine both younger and older adults simultaneously all aided the examination of whether affective forecasting success is in fact associated with subsequent situation selection behaviors, as well as whether this association varies across the lifespan. Nevertheless, Study 2 was not without shortcomings. Though the temporal spacing of the affective forecasting task, combined with the videos' equitable affective salience for both younger and older adults, rendered it a more appropriate measure than the Study 1 affective forecasting task, it's still possible that measuring how one predicts one will feel after watching a video clip is not the best way to capture affective forecasting ability. Whether participants are sufficiently motivated to make forecasts for such a decontextualized hypothetical event remains to be seen. It's likewise possible that making forecasts about hypothetical situations without knowing that one will actually have to experience them might make the situation seem less relevant and thereby decrease investment in making an accurate forecast. Moreover, calculating forecasting success as a difference score doesn't allow one to address the problem of how relative (as opposed to absolute) forecasting (Mathieu & Gosling, 2012), which the introduction briefly touched upon, might uniquely contribute to situation selection success. There were also only three indices

making up each forecasting score, and their reliability was not that high, as was the case with arousal forecasting in Study 1. Arousal forecasting was the most reliable forecasting index in Study 2; that could explain why we found an association between arousal forecasting and positive (relative to positive and neutral) situation selection. Regardless, it's encouraging that arousal forecasting is implicated across these two studies.

General Discussion

The overall aim of these studies was to ascertain whether affective forecasting ability is a resource for situation selection, and, if so, whether age differentially affected the relation between the two variables. Although the findings are not entirely replicated, it does seem that affective forecasting is implicated in situation selection behaviors; however, the associations are both modest and limited. In addition, they do not seem to strengthen with age.

Links to Existing Literature

The SOC-ER model posits that people might be apt to use situation selection if they have the ability to predict their emotional response during a given situation (Urry & Gross, 2010). The need for researching the potential association between affective forecasting and subsequent situation selection behaviors seems more evident than ever. There is a call for researchers to assess whether affective forecasting is actually a resource for situation selection; specifically, the field is becoming more interested in learning whether manipulating people's affective forecasting ability leads people to select situations that make them feel more positively (Quoidbach, Mikolajczak, & Gross, 2015). Given what is known about emotional goals and preferences (Tamir, 2009; Tamir, Ford, & Ryan, 2013), however, it's quite possible that increasing people's affective forecasting ability more generally leads people to select situations that make them feel the way they want to feel, be it positive, negative, arousing, or some

affective combination therein. On the other hand, if affective forecasting ability is only a resource for situation selection insofar as it serves to increase one's positive emotional outcomes, then affective forecasting might be a particularly salient resource for older adults because they might want to experience more positivity than negativity (Scheibe, & Carstensen, 2010). The ideal affect findings in Study 2 suggest that older adults in the sample only differed from younger adults insofar as they specifically wanted to experience less *high*-arousal negative affect, not global negative affect per se. It's been suggested that older adults might use situation selection because they want to avoid aversive physiological responding (Charles, 2010), and as such it may also be the case that affective forecasting is useful for older adults because they want to avoid feeling too aroused. That older adults are good at forecasting their arousal (Neilson et al., 2008) lends considerable credence to the latter argument. Though Study 2 didn't find that older adults were more successful than younger adults at forecasting their affect, the association between arousal forecasting success and positive situation selection behaviors across age groups suggests that knowledge of how intense situations might allow people to feel comfortable interacting with them.

Though the emotion and aging literature suggests that older adults might be more inclined to view and remember positive (relative to negative or neutral) stimuli (e.g., Mather & Carstensen, 2005), recent work contradicts such a theory, as one study demonstrated younger, middle-aged, and older adults selected equivalent ratios of valenced stimuli in the AE task, and exhibited mobile eye tracking behaviors that led to comparable emotional outcomes across all age groups (Isaacowitz et al., 2014). Study 2 likewise showed that younger and older adults watched similar ratios of valenced stimuli in the same task. Perhaps arousal, not valence, merits more attention in the aging literature (Sands & Isaacowitz, 2016). Though the presented studies

don't directly assess this issue, later comparisons could assess whether there were age differences in the types of arousal content participants viewed in the AE.

Theoretical and Clinical Implications

Given the findings of both Study 1 and Study 2, there are a number of implications this work has on future experimental designs. It also highlights areas within the real world where immediate consideration of the association between the constructs of affective forecasting and situation selection would be useful.

Although affective forecasting and situation selection likely aren't constructs that laypeople are fully cognizant of as they go about their lives, it seems plausible that individuals are nevertheless engaging in both of these activities quite regularly, to varying degrees of success. Amongst other things, this finding could aid clinicians in recruiting and maintaining clients for various psychopathology treatments. Perhaps some individuals in need of treatment don't seek it out because they forecast that they would feel more rejected, sad, or angry than they would be if they avoided treatment. If clinicians found a way to teach these individuals to forecast that they wouldn't actually feel as badly or intensely as they think they will they might have better luck at keeping participants in treatment and in remission. Eventually they might even be able to teach individuals to forecast that they'll feel moderately good post-treatment. For anxiety symptoms in particular, the results of Study 2 suggest that it might be important to identify those people who are unsuccessful at negative forecasting and to invest time into improving their arousal forecasting. Thus, the association between affective forecasting and situation selection is directly applicable to treatment for psychopathology.

While the studies' clinical implications are important, the results hint that affective forecasting and situation selection are broadly related, and as such understanding how

individuals generally use both of them on a daily basis is imperative. Affective forecasting and subsequent situation selection implicate not only socioemotional well-being but also decision making more generally. From a cognitive standpoint, they might further the understanding of predictive accuracy (Hoch, 1987), and might even provide avenues by which to enhance it. For example, recent evidence suggests that individuals induced to feel either disgust or embarrassment tend to anticipate avoiding sexual healthcare based on their perceived healthiness and prior sexual healthcare experiences (McCambridge & Consedine, 2014). Healthcare, sexual or otherwise, is very important, so maximizing individuals' access to it is paramount. If individuals could forecast that they would not feel immense amounts of disgust or embarrassment during routine sexual healthcare procedures but rather feel relieved, calm, or some related mood state their likelihood of selecting healthy situations would probably increase.

Since the relation between affective forecasting and situation selection seems to influence decision making, affective forecasting might also play a role in how individuals choose to interact with others. Interestingly, people's ability to appraise how other people feel might also influence their own affective forecasts and subsequent situation selection behaviors. Recent evidence suggests that individuals are likely to use other people's emotional expressions to infer what the other person is thinking; more specifically, they seem to use people's emotional expressions as proxies for the individual's intentions in the situation (de Melo, Carnevale, Read, & Gratch, 2014). If an observer in a prisoner dilemma sees the person across from them smiling, they might infer that the displayer is smiling because they're trying to cheat the observer. The observer's inference of the displayer's intention might motivate the observer to forecast that they would feel negatively about being cheated, and might subsequently cause the observer to choose

not to trust the displayer during the trial. Thus, affective forecasting ability and situation selection might play a role in both intrapersonal and interpersonal decision making.

Directions for Future Research

Perhaps the biggest drawback of the current set of studies is that they are essentially correlational in nature. While the results of correlational studies must be taken with a grain of salt, they nevertheless provide meaningful information about relations between variables that can be used to motivate future experimental inquiries. For instance, one interpretation of these studies' findings might motivate an experiment concerning individual differences in affective forecasting ability. If it is the case that some individuals with high affective forecasting success regulate their emotions somewhat differently than individuals with low affective forecasting success, then perhaps it is possible to manipulate individuals' affective forecasting ability in ways that will affect how they regulate their emotions. Perhaps one could implement a training aimed at increasing individuals' affective forecasting ability over time and seeing whether such a training had any influence on their subsequent situation selection behaviors. Drawing from the metacognition literature might be especially useful here. After all, as in absolute affective forecasting, people tend to think that their memory performance is different than it actually was (Lichtenstein, Fischhoff, & Phillips, 1982). Yet one could can theoretically maximize both the control and monitoring of information relevant to future metacognition and memory (Nelson & Narens, 1990). Since affective forecasting ability is arguably a special case of metacognition, maximizing the control and monitoring of information relevant to emotional situations might work to increase affective forecasting success, too. One could even go so far as to make the forecasts very specifically applicable to the person in question (e.g., forecasting events that are likely to happen in a corporate office as opposed to those that were to happen to an elementary

school child), give the person timely feedback on their forecasting success (or lack thereof), and see whether the person is able to self-correct their forecasting success over time. Thus, the studies presented within this proposal might serve to motivate interventions tailored increasing affective forecasting ability within an externally-valid context.

Another open question these two studies leave unanswered is how affective forecasting success should be conceptualized, and whether different conceptualizations of forecasting are more likely to be related to situation selection than others. For example, it's possible that taking an absolute difference between actual and forecasted affect and comparing it to 0 is too restrictive in capturing forecasting success. Again drawing from the metacognition literature, examining Gamma correlations (Nelson, 1984) or modeling the association between actual and forecasted affect would be informative. It might also be useful to compare associations between absolute affective forecasting and relative affective forecasting to situation selection (Mathieu & Gosling, 2012).

Insofar as the extent to which individuals value certain emotions varies across cultures (see Tsai, 2007 for a review), it stands to reason that there might also be interesting group differences in how good people of different cultures are at predicting their affect. Perhaps individuals from cultures like that of the United States, which tend to value more high-arousal positive affect (HAP; e.g., excitement), will be better at forecasting their actual HAP than individuals from cultures, like that of China, who value low-arousal positive affect (LAP; e.g., calmness). Conversely, perhaps individuals who value LAP will be better at forecasting their actual LAP than individuals who value HAP. There is evidence that cultural differences in interpersonal goals might account for cultural differences in ideal affect (Tsai, Miao, Seppala, Fung, & Yeung, 2007). If affective forecasting motivates one's interpersonal and emotional

goals it may be the case that affective forecasting works differently in cultures that value HAP and LAP, respectively. Study 2 showed significant age differences in the extent to which participants wanted to experience high-arousal negative affect (younger adults wanted to experience it more; refer to Table 8), and there was a potential age difference in the extent to which participants successfully forecast their feelings of arousal. Regardless of whether age or culture is a more salient construct when one makes affective forecast, studying cultural variation in affective forecasting ability is nevertheless another potentially meaningful avenue of research to explore.

Conclusions

The goals of the two presented studies were: 1) to establish an association between affective forecasting ability and situation selection, and 2) to demonstrate a possible age difference therein. Affective forecasting does seem to play a modest, limited role in individuals' situation selection behaviors, but it seems to be an ER resource younger and older adults use similarly.

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Table 1

Sample Demographic Information for Study 1

Mean age in years (*SD*)	19.15 (1.71)
Gender	
Male	32.1%
Female	66%
Did not report	1.9%
Ethnicity	
Hispanic or Latino	5.7%
Not Hispanic or Latino	92.5%
Did not report	1.9%
Race	
American Indian or Alaskan Native	1.9%
Asian	20.8%
Black or African American	5.7%
Native Hawaiian or Other Pacific Islander	0%
White	81.1%
Did not report	1.9%
Educational attainment	
High school diploma or equivalent	22.6%
Some college	71.7%
College diploma	1.9%
Some graduate school	1.9%
Did not report	1.9%

Table 2

Self-reported Emotional and Physiological Responding at Baseline and During the TSST in Study 1

Emotional Response	*M*	*SD*	Cronbach's Alpha (positive, negative) or Pearson's *r* (arousal)
Positive Emotion (3 items)			
Baseline	4.51	1.14	.72
Speech	3.36	1.25	.82
Math	2.94	1.06	.67
Negative Emotion (7 items)			
Baseline	2.01	0.75	.83
Speech	2.69	1.00	.84
Math	3.01	1.19	.85
Arousal (2 items)			
Baseline	2.71	0.89	.24†
Speech	4.09	1.27	.21
Math	3.80	1.35	.41**
Heart Rate			
Baseline	78.18	13.08	
Speech	89.42	13.95	
Math	84.18	12.61	
Skin Conductance			
Baseline	11.46	6.73	
Speech	13.52	7.83	
Math	13.44	7.87	
Corrugator Activity			
Baseline	8.44	5.45	
Speech	10.67	13.10	
Math	9.47	10.02	

Note: For Pearson's *r*, * $p < .05$, ** $p < .01$, † $p < .1$

Table 3

Self-Reported Emotional Responding After the Affective Forecasting Task during Pilot Testing in Study 1

Group	Emotional Response	*M*	*SD*
Made Affective Forecasts	Post-Speech		
	Positive	2.08	1.00
	Negative	2.29	0.70
	Arousal	3.30	2.12
	Post-Math		
	Positive	2.75	1.60
	Negative	2.32	1.70
	Arousal	3.13	2.14
No Affective Forecasts	Post-Speech		
	Positive	3.33	1.31
	Negative	1.46	1.30
	Arousal	3.38	0.85
	Post-Math		
	Positive	2.17	1.84
	Negative	1.79	0.80
	Arousal	2.00	1.68

Table 4

Key Forecasting and Situation Selection Variable Information for Study 1

	M(SD)
Absolute affective forecasting error	
Negative	.51(.54)
Positive	.56(.56)
Arousal	.56(.48)
Situation selection videos watched	
Total negative	1.40(.72)
Total neutral	1.45(.72)
Total positive	1.45(.72)

Table 5

Pearson-Product Moment Correlation Coefficients between Absolute Affective Forecasting Success and Situation Selection Behaviors in Study 1

	Forecasting Success-Positive	Forecasting Success-Negative	Forecasting Success-Arousal	Positive Videos Watched	Negative Videos Watched	Neutral Videos Watched	Positive-to-Neutral Videos Watched	Negative-to-Neutral Videos Watched
Forecasting Success-Positive	—	.53**	.40**	.07	-.14	-.01	.14	-.14
Forecasting Success-Negative		—	.11	-.32*	-.01	.24†	-.06	.13
Forecasting Success-Arousal			—	.18	-.16	-.19	-06	-.36**
Positive Videos Watched				—	-.16	-.33*	.51**	-.25
Negative Videos Watched					—	-.21	-.29*	.55**
Neutral Videos Watched						—	.02	.09
Positive-to-Neutral Videos Watched							—	.38**
Negative-to-Neutral Videos Watched								—

Note: * $p < .05$, ** $p < .01$

Table 6

Summary of Regression Analyses for Variables Predicting Positive-to-Neutral and Negative-to-Neutral Videos Watched in the Situation Selection Task in Study 1

	Positive-to-Neutral			*Negative-to-Neutral*		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Absolute forecasting success-positive	.37	.21	.32	-.15	-.13	-.77
Absolute forecasting success-negative	-.25	.20	-.21	.27	.23	1.49
Absolute forecasting success-arousal	-.22	.21	-.17	-.44*	-.33	-2.32
R^2		.07			.17	
F for R^2		1.2			3.3*	

Note: * $p < .05$

Table 7

Sample Demographic Information for Study 2

	Younger Adults	Older Adults
Mean age in years (*SD*)	18.96 (1.39)	69.40 (3.63)
Gender		
Male	44.4%	32%
Female	55.6%	68%
Ethnicity		
Hispanic or Latino	13%	2%
Not Hispanic or Latino	83.3%	98%
Did not report	3.7%	0%
Race		
American Indian or Alaskan Native	0%	0%
Asian	35.2%	4%
Black or African American	5.6%	6%
Native Hawaiian or Other Pacific Islander	1.9%	0%
White	59.3%	88%
Did not report	1.9%	2%
Educational attainment		
High school diploma or equivalent	44.4%	4%
Some college	53.7%	8%
College diploma	1.9%	28%
Some graduate school	0%	8%
Graduate degree	0%	52%

Table 8

Key Forecasting and Situation Selection Variable Information by Age for Study 2

	Younger Adults		Older Adults		*p*	Cohen's
	N	*M*(*SD*)	*N*	*M*(*SD*)	value	*d*
Absolute affective forecasting success						
Negative	54	1.46(.69)	50	1.62(.64)	.260	-.24
Positive	54	1.31(.51)	50	1.33(.53)	.708	-.05
Arousal	54	1.09(.53)	50	1.11(.49)	.155	-.05
Situation selection videos watched						
Low-arousal negative	54	.81(.55)	50	.80(.61)	.414	.02
High-arousal negative	54	.67(.78)	50	.50(.61)	.026	.24
Low-arousal positive	54	1.52(.61)	50	1.52(.61)	.933	.00
High-arousal positive	54	1.44(.57)	50	1.50(.54)	.649	-.11
Total negative	54	1.48(.91)	50	1.30(1.04)	.265	.19
Total neutral	54	1.56(.93)	50	1.66(.69)	.057	-.12
Total positive	54	2.96(.78)	50	3.04(.83)	.631	-.01
Total low arousal	54	3.89(1.00)	50	3.98(.74)	.021	-.10
Total high arousal	54	2.11(1.00)	50	2.02(.74)	.021	.10

Table 9

Key Psychological Health Information by Age for Study 2

	Younger Adults		Older Adults		*p*	Cohen's
	N	M(*SD*)	*N*	M(*SD*)	value	*d*
Depressive symptoms (BDI)	54	10.26(7.4)	50	6.16(4.7)	.012	.66
Anxiety symptoms (STICSA)						
Somatic	54	16.54(4.9)	50	14.06(3.0)	.002	.61
Cognitive	54	18.65(6.2)	50	14.98(3.8)	.004	.72
Total	54	35.19(9.7)	50	29.04(5.3)	.003	.78
Ideal affect (AVI)						
High-arousal positive	54	3.81(.73)	50	3.46(.72)	.897	.50
Positive, no arousal	54	4.31(.73)	50	4.26(.64)	.411	.07
Low-arousal positive	54	3.91(.73)	50	4.02(.65)	.377	-.16
Low arousal only	54	2.30(.67)	50	2.43(.54)	.171	-.21
Low-arousal negative	54	1.44(.58)	50	1.41(.35)	.111	.08
Negative, no arousal	54	1.40(.63)	50	1.33(.42)	.390	.11
High-arousal negative	54	1.48(.62)	50	1.28(.37)	.020	.39
High-arousal only	54	2.13(.71)	50	2.07(.52)	.153	.10
Actual affect (AVI)						
High-arousal positive	54	2.69(.69)	50	2.78(.67)	.761	-.14
Positive, no arousal	54	3.05(.79)	50	3.28(.80)	.981	-.29
Low-arousal positive	54	2.63(.68)	50	3.03(.72)	.501	-.57
Low arousal only	54	2.30(.67)	50	2.43(.54)	.171	-.21
Low-arousal negative	54	2.54(.64)	50	1.93(.49)	.203	1.08
Negative, no arousal	54	2.44(.80)	50	1.93(.49)	.001	.77
High-arousal negative	54	2.17(.72)	50	1.75(.47)	.005	.69
High-arousal only	54	2.13(.71)	50	2.07(.52)	.153	.10

Table 10

Pearson-Product Moment Correlation Coefficients between Absolute Affective Forecasting Success and Situation Selection Behaviors in Study 2

	Forecasting Success-Positive	Forecasting Success-Negative	Forecasting Success-Arousal	Positive Videos Watched	Negative Videos Watched	Neutral Videos Watched	Positive-to-Neutral Videos Watched	Negative-to-Neutral Videos Watched
Forecasting Success-Positive	—	.15	.46**	.09	.17†	-.29**	.19	.15
Forecasting Success-Negative		—	.64**	.18	-.01	-.16	.18	.16
Forecasting Success-Arousal			—	.29**	-.02	-.26**	.29**	.01
Positive Videos Watched				—	-.59**	-.28**	.64**	-.47**
Negative Videos Watched					—	-.61**	-.02	.92**
Neutral Videos Watched						—	.-.78**	-.71**
Positive-to-Neutral Videos Watched							—	.29**
Negative-to-Neutral Videos Watched								—

Note: * $p < .05$, ** $p < .01$

Table 11

Summary of Regression Analyses for Variables Predicting Positive-to-Neutral and Negative-to-Neutral Videos Watched in the Situation Selection Task in Study 2

	Positive-to-Neutral			*Negative-to-Neutral*		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Absolute forecasting success-positive	.17	.22	.09	.34	.22	.19
Absolute forecasting success-negative	.02	.19	.02	.09	.19	.07
Absolute forecasting success-arousal	.48	.29	.24	-.22	.28	-.12
R^2		.09			.03	
F for R^2		2.9*			.86	

Note: * $p < .05$

Table 12a

Pearson-Product Moment Correlation Coefficients between Absolute Affective Forecasting Success and Modified Ratios of Situation Selection Behaviors in Study 2

	Forecasting Success-Positive	Forecasting Success-Negative	Forecasting Success-Arousal	Positive to Positive and Neutral Videos Watched	Negative to Negative and Neutral Videos Watched
Forecasting Success-Positive	—	.15	.46**	..26**	.26**
Forecasting Success-Negative		—	.64**	.21*	.09
Forecasting Success-Arousal			—	.33**	.09
Positive-to-Neutral Videos Watched				—	.57**
Negative-to-Neutral Videos Watched					—

Note: * $p < .05$, ** $p < .01$

Table 12b

Pearson-Product Moment Correlation Coefficients between Absolute Affective Forecasting Success and Modified Ratios of Situation Selection Behaviors in Study 1

	Forecasting Success-Positive	Forecasting Success-Negative	Forecasting Success-Arousal	Positive to Positive and Neutral Videos Watched	Negative to Negative and Neutral Videos Watched
Forecasting Success-Positive	—	.53**	.40**	.03	-.15
Forecasting Success-Negative		—	.11	-.32*	-.19
Forecasting Success-Arousal			—	.24†	.01
Positive-to-Neutral Videos Watched				—	.52**
Negative-to-Neutral Videos Watched					—

Note: * $p < .05$, ** $p < .01$, † $p < .1$

Table 13a

Summary of Regression Analyses for Variables Predicting the Ratio of Positive to Positive and Neutral Videos and the Ratio of Negative to Neutral Videos Watched in the Situation Selection Task in Study 2

	Positive to Positive and Neutral			*Negative to Negative and Neutral*		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Absolute forecasting success-positive	.04	.03	.15	.17**	.06	.29
Absolute forecasting success-negative	.01	.03	.03	.05	.06	.12
Absolute forecasting success-arousal	.07†	.04	.24	-.07	.08	-.12
R^2		.12			.07	
F for R^2		4.7*			2.7†	

Note: * $p < .05$, ** $p = .01$, † $p < .1$

Table 13b

Summary of Regression Analyses for Variables Predicting the Ratio of Positive to Positive and Neutral Videos Watched and the Ratio of Negative to Negative and Neutral Videos Watched in the Situation Selection Task in Study 1

	Positive to Positive and Neutral			*Negative to Negative and Neutral*		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Absolute forecasting success-positive	.09	.08	.17	-.05	.09	-.10
Absolute forecasting success-negative	-.22**	.08	-.43	-.07	.09	-.14
Absolute forecasting success-arousal	.12	.09	.21	.04	.09	.07
R^2		.19			.04	
F for R^2		3.9*			.73	

Note: * $p < .05$, ** $p < .01$

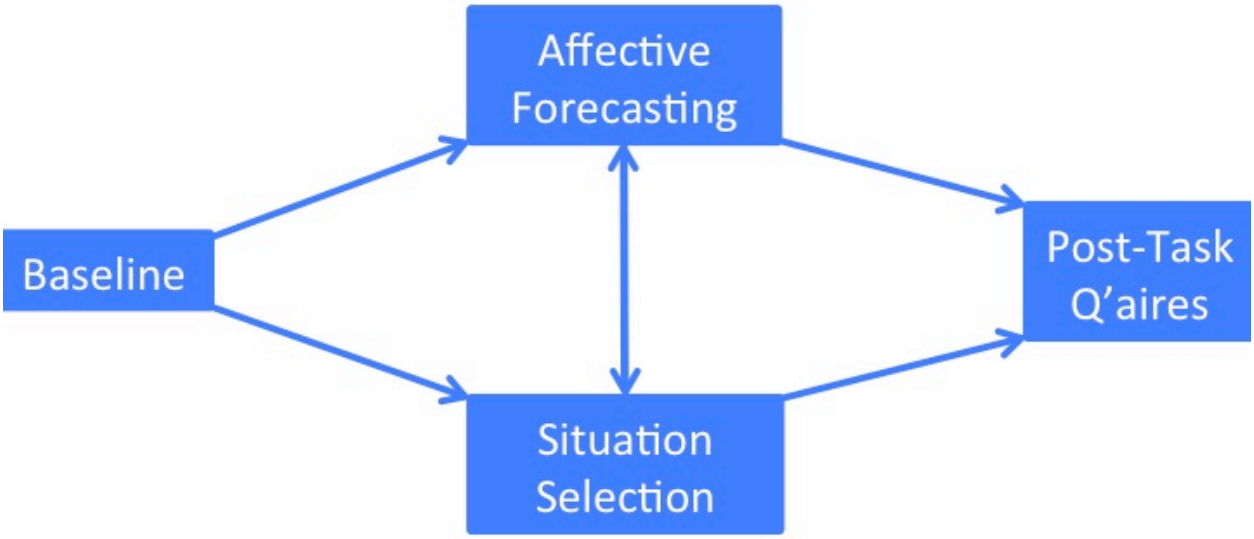

Figure 1. A flowchart explaining the overall Study 1 design. After completing informed consent, being attached to the physiological sensors, and calibrating the eye tracker all participants completed a baseline task whereby they looked at a fixation cross for a two-minute interval and then made self-reported ratings of current emotional positivity, negativity, and arousal. Next, participants completed an affective forecasting task and a situation selection task in a counterbalanced order. Finally, after completing both the affective forecasting and the situation selection tasks, participants all completed a battery of post-task questionnaires. Participants were then shown a comedic video clip, unhooked from the physiological sensors, and debriefed.

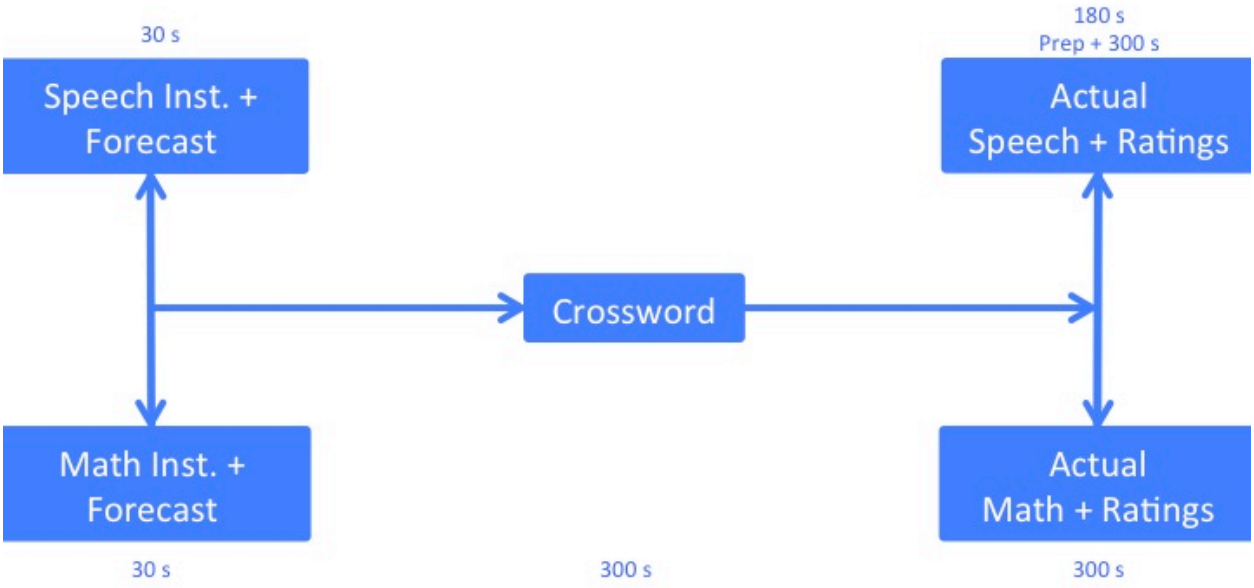

Figure 2. A flowchart explaining the Study 1 affective forecasting task. First, participants read brief instructional descriptions of both the speech and the math task of the TSST in a randomized order. After reading each description participants were given 30 seconds to deliberate how they thought they would feel during the task in question. They then provided ratings of how positively, how negatively, and how aroused they forecasted they would feel during that task. After making forecasts for both the speech and the math task participants then completed a crossword puzzle for 300 seconds in an attempt to ameliorate any memorial effects of the forecasts. Participants then actually completed the speech and math task in a randomized order, for 300 seconds each (as well as a 180-second preparatory period for the speech). They rated how positively, negatively, and aroused they actually felt at the conclusion of each respective task.

Figure 3. An example of one configuration of video thumbnails participants viewed during the Study 1 situation selection task. Each column corresponds to the videos' valence (negative, neutral, or positive), and the number of asterisks above each item corresponds to how arousing the video is. One asterisk is indicative of relatively low arousal, whereas two asterisks are indicative of relatively high arousal. If participants wanted to view a high-arousal positive video they would select the thumbnail in the bottom right-hand corner, which is highlighted in blue.

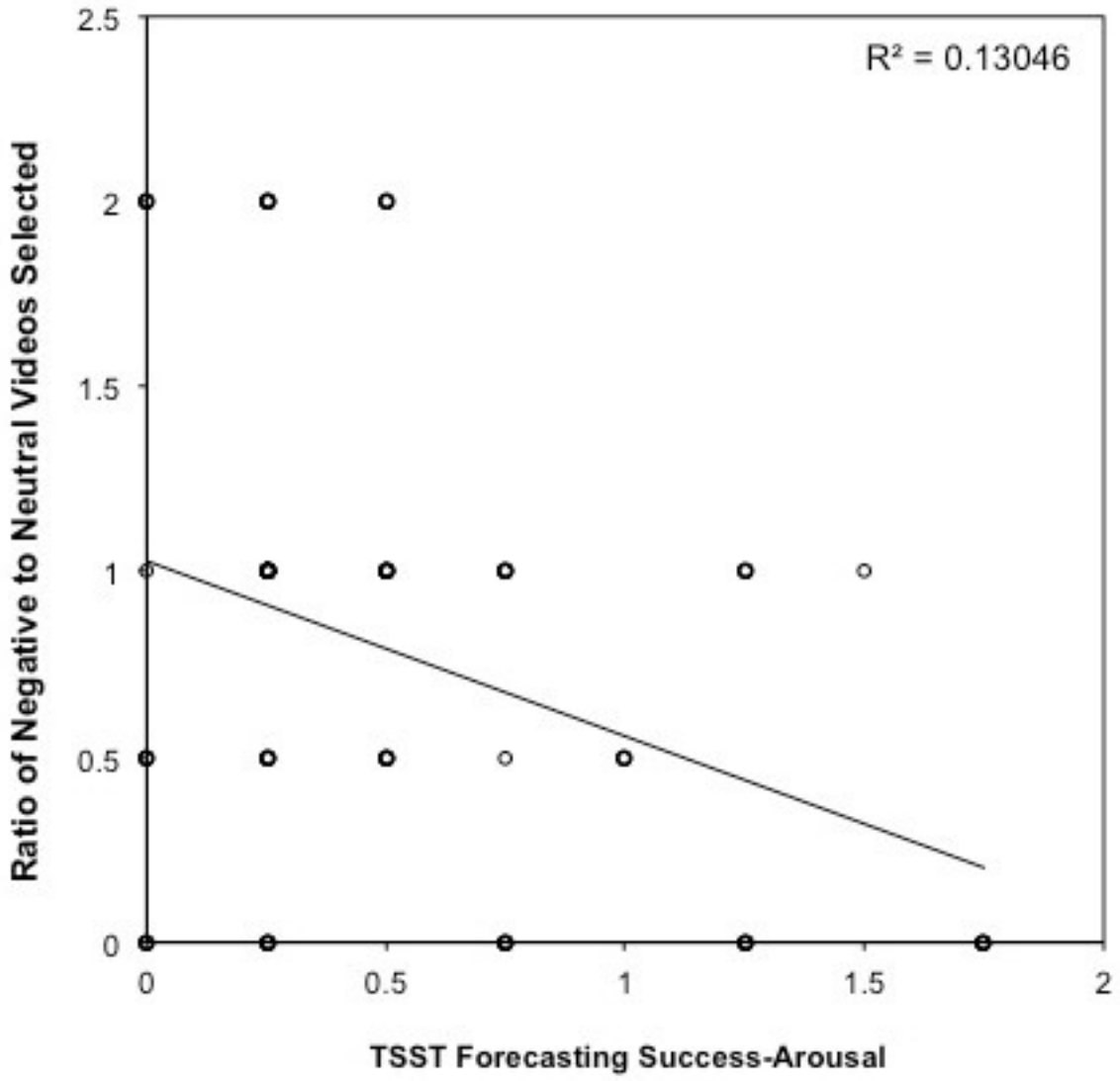

Figure 4. A scatter plot of the association between absolute arousal affective forecasting success during the TSST and the ratio of negative-to-neutral videos watched during the situation selection task in Study 1. The darker circles indicate a greater number of ties at a given point.

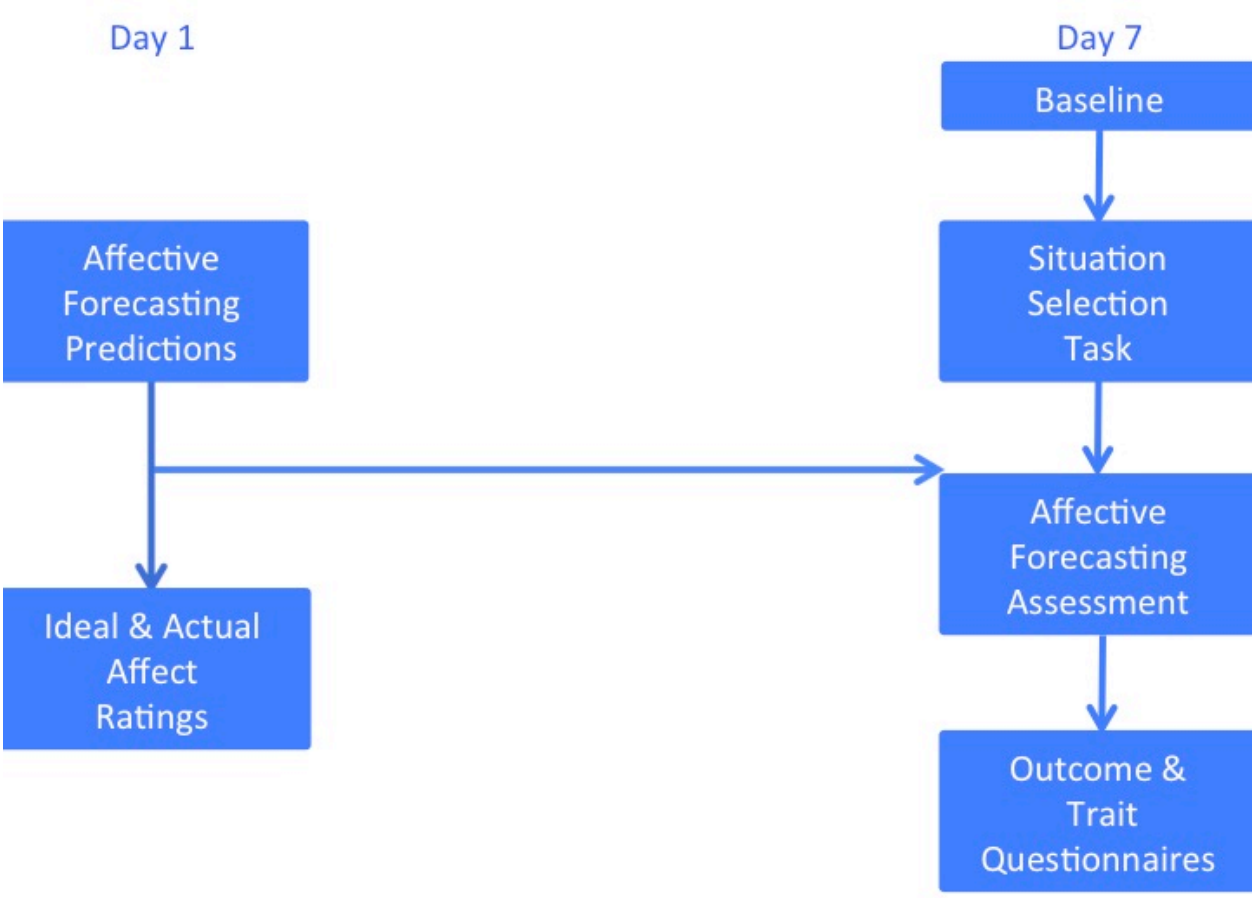

Figure 5. A flowchart explaining the overall Study 2 design. After completing informed consent, participants completed affective predictions for events they might experience, including forecasts for three videos they would see during their upcoming laboratory session (albeit unbeknownst to them). They also made ratings of their ideal and actual affect. One week later, participants came into the laboratory, assented to their continued participation in the study, were attached to the physiological sensors, and calibrated the eye tracker. Next, all participants completed a baseline task, whereby they looked at a fixation cross for a two-minute interval and then made self-reported ratings of current emotional positivity and negativity (and, through later derivation, arousal). Participants stated how they wanted to feel approximately 20-30 minutes later, and were then trained on how to complete the situation selection task. After participants completed the situation selection task, they viewed the three videos they had made forecasts for. Upon completion of the forecasted videos participants' actual affect was again assessed, and then post-task questionnaires, psychological health outcome measures, and a battery of trait questionnaires were administered. Finally, participants were shown a comedic video clip, unhooked from the physiological sensors, and verbally debriefed.

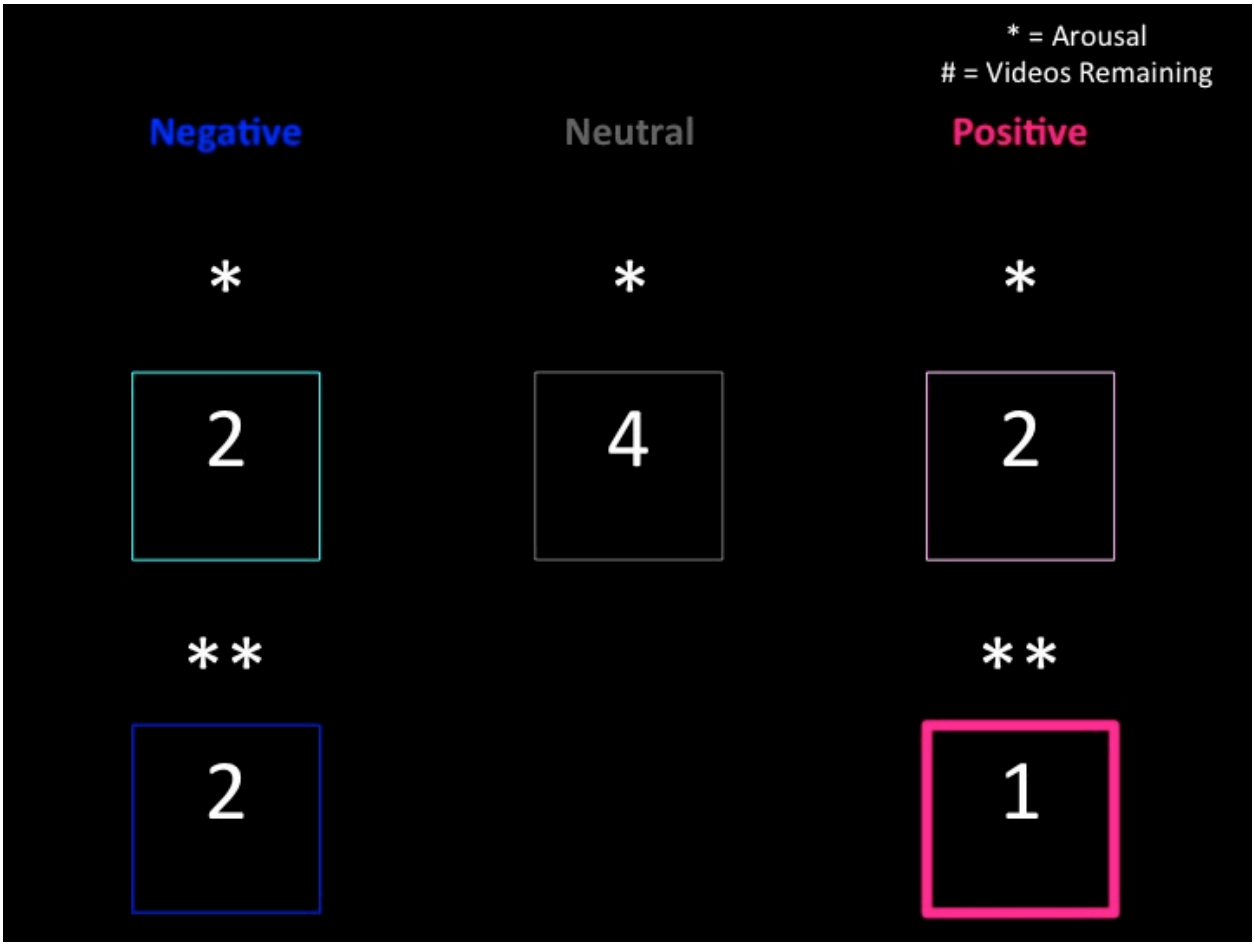

Figure 6. An example of one configuration of video information participants viewed during the Study 2 situation selection task. Each column corresponds to the videos' valence (negative, neutral, or positive), and the number of asterisks above each item corresponds to how arousing the video is. One asterisk is indicative of relatively low arousal, whereas two asterisks are indicative of relatively high arousal. The number of videos remaining within each category is presented inside each box. If participants wanted to view one of the high-arousal positive videos they would select the box in the bottom right-hand corner, which is highlighted in pink.

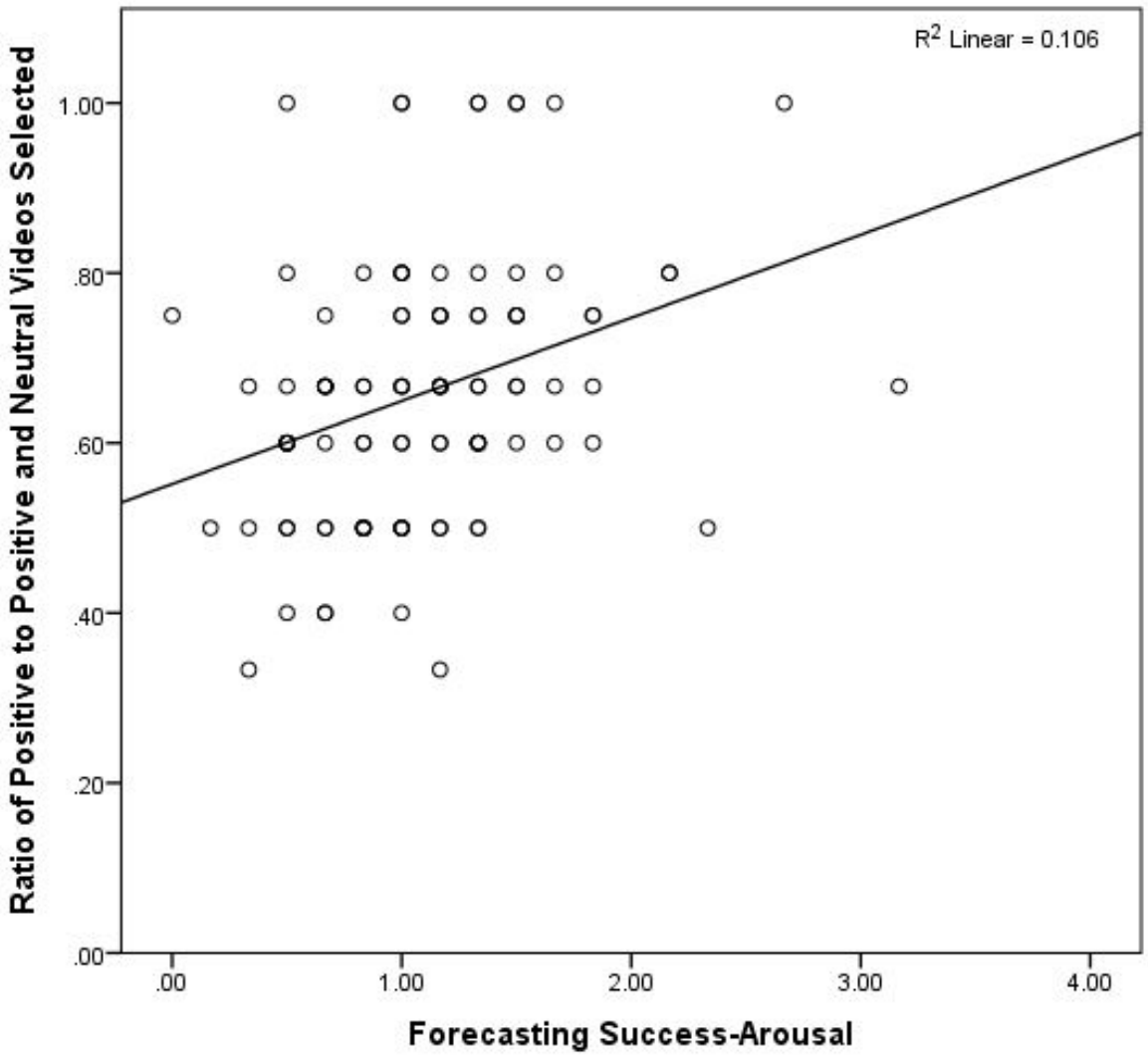

Figure 7. A scatter plot of the association between absolute arousal affective forecasting success and the ratio of positive to positive and neutral videos watched during the situation selection task in Study 2. The darker circles indicate a greater number of ties at a given point.

Appendix

Post-Task Questionnaires

Emotion Regulation Strategies Questionnaire (ERS). The ERS is an in-house, 20-item measure designed to ascertain the strategies individuals use when regulating their emotions. It is a task-specific measure that assessed the extent to which participants used specific emotion regulation strategies during the affective forecasting task and the situation selection task, respectively. Participants rated each item on a Likert scale (1 = *not at all*, 9 = *quite a bit*).

Difficulty, success, and effort. Participants' difficulty with, success on, and effort exerted in both the affective forecasting task and the situation selection task was assessed with this 9-item in-house measure. Participants rated each item on a Likert scale (1 = *not at all*, 10 = *extremely*).

Trait Questionnaires

A wide battery of trait questionnaires was administered to participants at the end of the laboratory sessions (i.e., after participants had completed any affective forecasting or situation selection tasks and their respective post-task questionnaires) for both Studies 1 and 2.

Affective style. The 20-item Affective Style Questionnaire (ASQ; Hofmann & Kashdan, 2010) was administered to ascertain how individuals tend to regulate their emotions. Participants rated each item on a Likert scale (1 = *not true of me*, 5 = *extremely true of me*). It examines three basic regulatory tendencies: concealing, adjusting, and tolerating.

Stress. Trait levels of stress were assessed using the Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978). The LES is a 50-item measure that assesses the number of common stressors individuals experienced over the past 4 months, as well as the perceived

impact each of those stressors had on the individual (-3 = *extremely negative*, +3 = *extremely positive*).

Sleep assessment. Participants were asked to report about their sleep the night before they came into the laboratory for the study across 10 different items. Topics of interest include when the participant went to sleep, whether they woke up during the night, and when they woke up in the morning.

Menstrual cycle assessment. 8 self-report items were given to all female participants to ascertain important information about their menstrual cycles. Topics of interest include typical cycle duration, whether or not they've ever experienced amenorrhea, and information about their contraceptive usage.

Global health. At the end of the trait questionnaire battery participants were asked to rate their overall health and quality of life. Participants made ratings on a Likert scale (1 = *excellent*, 5 = *poor*).

Eye Tracking.

Bilateral eye-tracking data were unobtrusively collected using a Tobii T120 Eye Tracker (Danderyd, Sweden; sampled at 60 Hz). Fixations were identified using the "Tobii fixation filter" algorithm. Areas of interest were determined *a priori* based on the type of information the participant was looking at on the screen—namely, information concerning valence and arousal.