Supplementary Materials

Negative Valence Effect in Affective Forecasting: The Unique Impact of the Valence Among Dispositional and Contextual Factors for Certain Life Events

SM1

To date, affective forecasting has been defined as an individual's predicted emotional responses to a specific event. Studies of affective forecasting have usually involved asking participants to forecast their affective responses to an identical target event, and then rating their actual feeling at some point in time after it. This method is valuable because it allows to compare emotional forecasts and reactions to a standardized set of events. However, given the high number of variables to be included to fulfill the objectives of the present study, imposing one specific, identical event to be predicted by all of the participants would have presented a major drawback: the limitation of internal variability of the studied factors. Indeed, events that are the same for each participant can have a low emotional charge, as is the case with artificial random events like a draw or gambling games for instance (e.g. Ayton et al., 2007; Kermer et al., 2006; Lench, Safer, & Levine, 2011; Morewedge & Buechel, 2013 ; Nielsen et al., 2008), or on the contrary, extremely evocative and important for the participants, as can be true for sporting events (e.g. Wilson & Gilbert, 2003 ; Hoerger et al., 2010) or cultural events like Valentine's Day or Christmas day (e.g. Buehler & McFarland, 2001 ; Martin & Quirk, 2015). In the present study, the different levels of the 3 contextual variables that were studied (i.e. importance, frequency and valence) should be represented through the responses of the sample population. For instance, had a common event such as a sports match been selected, the low level of importance could have been under-represented when considering players or supporters and conversely in the case of winning something such as a cookie, a soda or 5 dollars. Another example would be that a date for Valentine's Day may have been evaluated with a low frequency but a high importance in the younger subjects of the sample compared to their older counterparts (e.g. Morse & Neuberg, 2004). Given the number of variables presently included, this procedure was the most relevant choice of design (e.g. Buehler & McFarland, 2001; Wenze, Gunthert, & German, 2012).

In addition, many affective forecasting studies focused on events where the outcome is unlikely, like HIV test results (Sieff, Dawes, & Loewenstein, 1999), sports bets (Crawford, McConnell, Lewis, & Sherman, 2002), university housing attribution (Dunn, Wilson, & Gilbert, 2003), driving license tests (Ayton, Pott, & Elwakili, 2007), money games (Nielsen, Knutson, & Carstensen, 2008), or exam results (Kwong, Wong, & Tang, 2013). However, recent studies have shown the role of the likelihood of the outcome of an event on the accuracy of affective forecasting (Buechel, Zhang, & Morewedge, 2017). Because people are sensitive to probability specifications when they forecast their affect for an event but less when they experience its outcome, the probability of occurrence directly influences the accuracy of forecasting (Andrade & Van Boven, 2010; Ayton et al., 2007; Buechel, Zhang, Morewedge, & Vosgerau, 2014; Buechel et al., 2017; Buehler & McFarland, 2001). Consecutive to the data present in the literature about the likelihood of event outcome, the present study controlled the variability of this factor through an event for which participants estimated the probability of its outcome as certain.

SM2

Usually, the measure of happiness is regularly found as a support for the study of affective forecasting. Thus, Gilbert et al. (1998) originally asked participants to make affective forecasting and experience through a measure of happiness for different events. However, other measures of affect can also be found in the literature like the level of anxiety (e.g. Lench et al., 2011), sadness (e.g. Quoidbach & Dunn, 2010), fullness, proudness, sadness, loneliness (Hoerger & Quirk, 2010) or pleasantness (e.g. Zelenski, Whelan, Nealis, Besner, Santoro, & Wynn, 2013). One explanation for this variability in practice is that the measure of happiness may not always be the most appropriate for the event used. In some cases, the evaluation of other affects may be richer, such as the anxiety of a first date, or the fullness felt after service to a stranger. Conversely, in a study for which various events are evaluated by the participants, asking them to predict an overly specific common affect could become inappropriate for some cases (e.g. level of happiness for an annual gynecological visit, level of anxiety to bake with grandchildren, etc.). In order for the question of prediction and experience to make sense for each situation given by the participants, we chose the larger terms of emotional satisfaction to assess affective forecasting in the present investigation.

SM3

In studies typical of affective forecasting research, participants are asked to predict how they will feel for a specific event, and are then asked how they feel just after its occurrence. The prediction and actual feeling are compared to rate the level of inaccuracy of the forecast. Even if this procedure is rather simple, important differences are observed across the studies. According to Levine et al. (2012), the main methodological problem in affective forecasting research is that participants were asked to predict their emotional feelings on a specific event (e.g. “How happy will you feel about Barack Obama being elected president?”), but when the event occurred they were asked to report their actual feelings without any reference to the event for which they had made a prediction (e.g. “In general, how happy are you feeling these days?”). In other words, specific and general ratings are usually performed in the same study, leading to some confusion in the measures. Levine et al. (2012) showed that the intensity bias is only observed when a specific prediction is followed by a general emotional rating after the event. However, when both ratings are specific (e.g. “How happy will/do you feel about Barack Obama’s victory?”), the intensity bias is actually absent (Levine et al., 2012, 2013; for a response to these criticisms, see Wilson & Gilbert, 2013). As a consequence, people seemed able to accurately predict the intensity of their feelings about future events depending on the way the feelings were investigated after the event.

SM4

It should be acknowledged that our results show that the averages of emotional satisfaction predicted and experienced was above the scale midpoint (i.e. 5/10). Although this is not surprising for positive events, these results may *a priori* seem illogical when considering this midpoint as the boundary between positive and negative valence. Nevertheless, we suggest that the personal average of individuals may be different from the midpoint point scale. For example, the Belgian average of life satisfaction and well-being scores are 6.94 and 6.9/10 for years 2014 and 2016, respectively (Helliwell, Layard, & Sachs, 2015; OCDE, 2017). Thus, if the participants in this study intuitively referred to their personal emotional satisfaction average, a rating score greater than 5/10 for negative events can be better explained. Having not asked the participants to follow the midpoint of the scale to represent their personal average of well-being (i.e. “On a scale of 1 [extremely bad] to 10 [extremely good]”), we consider that participants have complied well with

our previous instructions. However, since we have not requested the participants to rate their average general emotional satisfaction, it's not possible to be sure whether the mean values of the Belgian population were representative of our sample.

SM5

Memory bias

Affective forecasting is related to memory (Levine et al., 2018). For every decision we make, we anticipate future scenarios on the basis of the remembrance of similar past events (Szpunar, 2010; Tulving, 1985). The same process occurs for forecasting future affects (Doré et al., 2016). However, memory has some well-known biases, which could then alter the prediction of emotions. There is some evidence that strong emotions felt during an event increase the likelihood that emotional events are remembered more and quicker (Kensinger, 2009; *fading affect bias*: Walker, Skowronski, & Thompson, 2003). Based on various brain activation pathways recruited during encoding and remembering positive or negative events, data showed that negative events are remembered with more details, especially sensory details. For example, Sharot and Phelps (2004) demonstrated that the encoding of emotionally negative words is deeper relative to neutral words in long-term memory. Hence, a large body of evidence has shown that our memory is selective and has demonstrated that, to foresee our future affects, we rely on the most intense and salient past information (Gilbert & Wilson, 2007; Yonelinas & Ritchey, 2015). In the present study, the frequency of the experienced event did not influence the inaccuracy of forecasting: having experienced an event once or 100 times didn't affect the accuracy of our predictions. So, the lack of relationship between the frequency at which we have gone through the event and the inaccuracy of affective forecasting could be explained by the fact that only specific memories spontaneously monitor our vision of the future, however many times we have previously experienced the event. This result is consistent with previous findings about familiarity of events experienced or not in the past (Coteț & David, 2016). Also, in the present study where people were asked to predict their feeling for a negative event, we can speculate that salient negative memories on which they based their predictions may have led them to underestimate the level of emotional satisfaction; it may therefore be a case of negative intensity bias. Moreover, basing predictions on partial or unrepresentative memories can lead us to the misestimation of future emotions (Morewedge et al., 2005). Even if the intensity bias could be

partly explained by the specific availability of certain pieces of information in one's memory (“a top-of-the head strategy”; Wilson et al., 2001), this does not exclude another explanation of the bias encompassing a beneficial cognitive strategy. Rather than apprehending the intensity bias as an undesirable human incompetence, a growing number of researchers are wondering what adaptive benefits might be behind this mechanism (Wilson & Gilbert, 2003; Dunn & Laham, 2006; Vasquez & Buehler, 2007; Hoerger et al., 2010; Morewedge & Buechel, 2013).

Motivational bias

A frequent claim advocated to explain the error of affective forecasting is that it can play a self-regulatory function as a motivational mechanism (Gilbert et al., 1998; Lam, Buehler, McFarland, Ross, & Cheung, 2005; Mischel, Cantor, & Feldman, 1996; Norem, 2001; Wilson & Gilbert, 2003). Through a misestimation of the future affect, the intensity bias could lead the predictor to reach his or her goal. Wilson et al. (2001) showed that people who experienced a negative event tended to make less new negative predictions for a future negative event compared to inexperienced people. However, having learned from past experiences did not protect these experienced subjects from a strong long-lasting bias for these new predictions. In addition to a more elaborate rationalization and generalization phenomenon postulated for negative events, the authors interpret the results as a motivational and self-protection strategy. A long time ago, Norem and Cantor (1986) showed that an overestimation of anticipated negative events is not as irrational as it might seem to be. Their motivational theory called *defensive pessimism* indicated that individuals could sometimes predict low expectations to be prepared for potential failure, or to act under high motivation for avoiding an unpleasant outcome. In fact, individuals could imagine the worst in order to achieve a strong motivation to do their best, leading to the prevention of a fatal outcome. Therefore, defensive pessimism is not an error but an adaptive strategy.

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