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Foreseeing Versus Feeling:
How Accuracy of Affective Forecasting Relates to Health Behavior Change

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Background: Whereas the importance of affective processes for health-related motivation and behavior is well established, little research has assessed either the accuracy or potential impact of affective forecasts about health behaviors. *Purpose:* The present study addressed three research questions: (1) How accurate are affective forecasts about health behaviors? (2) Does forecasting accuracy influence health behavior performance, and (3) future motivation? *Methods:* We conducted a longitudinal study of 8 health behaviors (N = 857). Measures of Reasoned Action Approach variables, habit, and intention were taken at baseline. At 3-month follow-up, participants reported behavioral performance, future motivation, and the affect experienced in relation to each behavior. Accuracy of affective forecasting was indexed by the difference between anticipated versus experienced affect. *Results*: Participants generally underestimated how good performing health behaviors would make them feel. Overestimating and underestimating affect were both associated with lower behavioral performance and future motivation, whereas greater forecasting accuracy predicted increased behavior and future motivation, even controlling for Reasoned Action Approach variables and habit. Importantly, forecasting accuracy interacted with anticipated affect, such that forecasts that were both positive and accurate were associated with increased behavior and motivation. Forecasting accuracy was associated with greater anticipated affect and baseline intentions, and lower perceived behavioral control. *Conclusions:* This study demonstrates that affective expectations and experiences both matter for motivation and action and underscores the importance of affective forecasting for health behavior change.

Keywords: Affect, forecasting, accuracy, Reasoned Action Approach, behavior change

Lay summary: A study conducted over three months found that people tend to underestimate how enjoyable it would be to perform health behaviors. Behavioral performance and motivation were highest when people not only had positive expectations about how these behaviors would feel, but also when these expectations were realistic. These findings highlight the importance of affective forecasting for health behavior change.

Introduction

A growing body of literature indicates that expectations about how performing a behavior would feel drives motivation and action[1]. In fact, affective expectations better predict health-related behavioral intentions than people's beliefs about how important it is to perform the behavior[2-3]. However, the accuracy of such affective expectations (i.e., how people expect to feel versus how they really feel after behavioral performance) is seldom assessed for health behaviors. Whether people can accurately predict their future feelings following an event or behavior is central to the *affective forecasting* literature[4]. Traditionally, affective forecasting accuracy has been examined in the context of hypothetical events and purchase decisions[5]. The present research investigates how affective forecasting influences health behaviors through three questions: (1) How accurate are affective forecasts about health behaviors? (2) Does forecasting accuracy influence health behavior performance? (3) Does forecasting accuracy influence future motivation?

The Reasoned Action Approach and Habits

Forecasting accuracy needs to be considered in relation to established models of behavior change such as the Reasoned Action Approach (RAA)[6]. The RAA proposes that behavior-specific attitudes (i.e., affective and cognitive), norms (i.e., injunctive and descriptive), and perceived behavioral control (PBC) promote intention formation, which in turn drives behavior. It should be noted that affective attitudes—defined by Williams et al.[7] as "the aggregation of anticipated affective responses"—are a measure of expected or anticipated affect. Although the RAA acknowledges the importance of anticipated affect in shaping intentions, neither experienced affect nor the difference between experienced and anticipated affect (i.e., forecasting accuracy) feature in this framework. Evaluating forecasting accuracy in the context of the RAA could offer a more comprehensive perspective on the factors that influence health behaviors.

Habit theory, which examines automatic processes that underlie behavior, also needs to be

considered. Habitual behaviors occur independently of effortful thinking[8] and are learned through repeated performance in stable contexts[9]. Researchers have emphasized the need to use frameworks that integrate both habitual and reasoned processes to provide a comprehensive understanding of behavior[10]. Indeed, habits account for additional variance in behavior beyond reasoned processes[11-12]. Habits could be seen to capture affect, as positive reinforcement is crucial for the development of habits[13]. The present study therefore tests whether forecasting accuracy accounts for behavior and motivation controlling for both RAA variables and habits.

Affective Forecasting Accuracy

There is an abundance of research that assesses the accuracy of affective forecasts[5]—demonstrating that people's predictions of their future feelings are often inaccurate[14] —and identifies sources of such inaccuracy[15-16]. For example, people overestimated how bad ending a relationship[8] or becoming disabled[15] would feel. Conversely, they overestimated how good they would feel from moving to sunny California or receiving tenure as a professor[17]. Such prediction errors can be attributed, in part, to immune neglect and focalism. Immune neglect refers to discounting psychological resilience[16]. For instance, people with paraplegia report greater happiness than expected because observers often fail to consider how well people cope with negative events[16]. A second source of error, focalism, concerns overweighing one affective feature of an event or behavior (e.g., happiness while enjoying California beaches) while neglecting other associated feelings (e.g., frustration in traffic)[17]. These factors contribute to skewed forecasts about how future events and behaviors will feel.

Few studies have examined forecasting accuracy for health behaviors. While research has shown that people expect physical activity to feel more unpleasant than it actually does[18-19]—which could result in missing out on health and mood benefits[20]—it is unclear whether this underestimation generalizes to other health behaviors (e.g., eating fruits and vegetables[21], avoiding sedentary behavior[22]). Evaluating forecasting accuracy across different behaviors would facilitate understanding of discrepancies between people's expectations and their affective experiences.

Affective Forecasting, Motivation, and Behavioral Performance

Research on affective forecasting for health behaviors has focused exclusively on documenting *whether* anticipated affect is accurate. The impact of accuracy on motivation and behavior is understudied. The literature suggests five possibilities about how forecasting accuracy could impact motivation and behavior (see Figure 1):

1. Accuracy of forecasts does not matter for motivation and behavior.

It is possible that affective expectations alone guide behavior and forecasting accuracy does not matter. This is suggested by models of health behavior such as the Reasoned Action Approach (RAA)[6], which posits that behavior-specific attitudes, norms, and perceived behavioral control drive intentions and behavioral action. For example, if someone expects eating a salad will be enjoyable, they will likely order it at a restaurant. But if they expect eating a salad will be unenjoyable, they will avoid ordering salad even if their expectation was incorrect. Thus, if people prioritize anticipated affect in decision-making, opting for choices that they believe will maximize their happiness[23], then the accuracy of their anticipated affect may have little consequence for behavioral outcomes[24].

2. Overestimation promotes behavior and motivation.

Overestimation occurs when people expect the behavior to make them feel better than it actually does, which can be adaptive. That is, overestimating how good a future behavior feels can motivate goal-striving[25-26]. Research has shown that higher expectations of positive affect promote intentions and subsequent behavior[2] and increasing anticipated positive affect leads to improved behavioral performance[27]. It has also been proposed that 'good' affective forecasts are hopeful, rather than accurate[28]. Consistent with this argument, studies found that trait optimism was positively associated with health-enhancing behaviors and better health outcomes[29-30]. It is possible, therefore, that "expecting the best" could result in the highest levels of health-related motivation and behavioral performance.

3. Underestimation promotes behavior and motivation.

Underestimation occurs when people expect the behavior to make them feel worse than it does which also has potential merit for behavior and motivation. The literature on defensive pessimism indicates that "expecting the worst" is a self-regulatory strategy that facilitates goal pursuit[31]. By imagining potential negative outcomes associated with a future behavior, defensive pessimists proactively prepare for the worst and can thereby reduce negative affect experienced during the behavioral performance[31]. Furthermore, when people enjoy performing a behavior more than they expected to, such underestimation can generate surprise. Pleasant surprises make people feel good[32], which can reinforce continued performance of the behavior. Surprise also activates reward pathways that increase the attention given to the behavior[33], which in turn enables people to learn from prediction errors, strengthening the association between the behavior and affective outcome[34]. Thus, having low affective expectations could be a strategic means to motivate behavior.

4. Accurate forecasts promote behavior and motivation.

Accurate forecasts accrue when expectations about how the behavior will feel are the same as how the behavior indeed feels. Several researchers have suggested that being able to accurately forecast affect is important for behavior and motivation[14,35] and a lab study showed that biased affective forecasts were associated with lower persistence with a behavioral task[36]. Another study examined how accuracy influences the predictive validity of perceptions of control. Findings showed an interaction between perceived behavioral control (PBC) and actual control, such that PBC better predicted behavioral

performance when perceptions of control were accurate[37]. These studies suggest that when people can accurately predict their future feelings, they will be more likely to feel motivated and perform the behavior. Being accurate in affective forecasts reduces the likelihood of low-balling the affective benefits of health behaviors or being disappointed when high expectations are not met. Furthermore, when people know what to expect, they may be better prepared to manage their affective responses in a way that facilitates performance of the behavior.

5. Positive but realistic forecasts promote behavior and motivation.

A final possibility is that *positive but realistic expectations* may be more effective for promoting motivation and behavior than accuracy alone (Figure 1e). There is initial research to suggest this may be the case. Kaplan et al. (2020) observed that expecting—and actually experiencing—positive affect from physical activity was associated with higher levels of behavioral performance. A review showed that encouraging realistic and positive outcomes of physical activity promoted physical activity among cancer survivors[37]. Avishai et al. (2018) observed that intentions better predicted behavior when intentions were more closely aligned with expectations to act (i.e., intentions more accurately reflected the likelihood of performance)[38]. Fantasy realization theory further demonstrates that when people imagine positive outcomes but then acknowledge obstacles in current reality that block the desired future, they become more motivated and better translate their intentions into behavior[39]. These studies support the idea that expected positive affect that is anchored in reality could foster motivation and behavior.

The Present Study

We aimed to shed light on the role of affective forecasting in health behavior change via a 3-month longitudinal survey of 8 health-related behaviors. First, we examine the accuracy of affective forecasts. Next, we determine how forecasting accuracy relates to behavioral performance and future motivation, controlling for variables from the RAA and habit theory.

Method

Procedure

The research was approved by the University of North Carolina at Chapel Hill's Research Ethics Committee (#17-02330) and all participants provided informed consent. Participants recruited from Prolific.com completed two surveys spaced three months apart, and received £7.80 for completing the entire study. At baseline, participants reported their attitudes (i.e., anticipated affect, cognitive attitudes), norms, PBC, intention, and habits in relation to 8 health-related behaviors in order (i.e., physical activity, flossing, eating fruits and vegetables, eating a low-fat diet, avoid snacking, avoid drinking more than recommended weekly limit of alcohol, avoid continuous sitting, and avoid eating more than two portions of red meat per week). Attitudes, norms, and PBC capture components of the RAA – the items used to measure these constructs were developed by Conner & Sparks (2015)[40], and validated as consistent with the RAA theory by McEachan et al. (2016)[41]. Demographic information was collected at the end of the survey. At follow-up, participants reported their performance of the behaviors, their experienced affect, and intentions to continue these behaviors (i.e., future motivation). Other variables (i.e., self-control, affect regulation) from this same dataset have previously been used to investigate other drivers of health behavior (masked)[42-43]—only variables relevant to the current research question are described below. Data collection took place from September 2017 to December 2017.

Participants

A total of 896 participants completed the baseline survey (59.4% female, M_{age} = 33.78, SD_{age} = 9.40). The majority of the sample was Caucasian (84.74%), 2.56% was African, 1.89% was Asian, 2.45% was Latino/Hispanic, 2.45% was Mixed Race, and 5.90% other ethnicities. Three months later, 623 participants completed the follow-up survey. This resulted in approximately 10% of missing data (i.e., proportion of cells missing), which exceeds the recommended 5% threshold for complete-case analyses as missingness may introduce bias[44]. Furthermore, the missing values at follow-up (i.e., experienced affect, behavioral performance, future motivation) were central to the current research questions. We therefore imputed missing values using multiple imputation, a commonly used approach for handling missing data[45-46]. Multiple imputation uses available datapoints to predict plausible values for the missing variables, and generates multiple datasets to account for uncertainty about the missing variables' true value. To ensure that imputation was appropriate, we conducted attrition analyses comparing the demographics of participants who completed versus did not complete the study. Participants did not significantly differ on ethnicity (p = 0.41), gender (p = 0.25), or education (p = 0.35). While there was a difference in average age for participants who completed the study (M = 34.6, SD = 9.45) versus those who did not (M = 32.0, SD = 9.05), the age difference was extremely small (Odds Ratio = 1.03). We ran 50 imputations with Maximum Likelihood Estimation to impute the missing values. A total of 39 participants were excluded for failing to select the directed response on two attention check questions (e.g., "When I'm upset, I refuse to eat cake." (Please answer 'Almost always')) administered at baseline, leaving a final sample of 857 participants for analysis.

Measures

Reasoned Action Approach. *Anticipated affect* was measured with 2 items (e.g., "Doing [behavior] each day over the next three months would be…"; *1 = not enjoyable/unpleasant* to *5 = enjoyable / pleasant*, mean r = 0.85). *Cognitive attitude* was measured with 2 items (e.g., "Doing [behavior] each day over the next three months would be…"; *1 = worthwhile/important* to *5 = pointless/unimportant*, mean r = 0.74). *Descriptive norms* (i.e., "I think most people who are important to me will do [behavior] each day over the next three months"; *1 = strongly disagree* to *5 = strongly agree*) and *injunctive norms* (i.e., "Most people important to me think that … do [behavior] each day over the next three months"; *1 = I*

should to *5 = I should not*) were measured with single items. *Perceived behavioral control (PBC)* was measured using 2 items that correspond to self-efficacy (i.e., "If it were entirely up to me, I am confident that I could do [behavior] each day over the next three months"; *1 = strongly disagree* to *5 = strongly agree*) and perceived control (i.e., "How much control do you believe you have over doing [behavior] each day over the next three months"; *1 = no control* to *5 = complete control*), mean r = 0.40. *Intention* was measured on a 2-item scale (e.g., "I intend to do [behavior] each day over the next three months"; *1 = strongly disagree* to *5 = strongly agree*, mean r = 0.84).

Habit. Habit was measured by 2 items[9], calculated as the product of performance frequency (e.g., "I do [behavior] each day"; *1 = never* to *5 = always*) by context stability (e.g., "Is doing [behavior] each day something that you would do at the same times and in the same places each time?"; *1 = Definitely no* to *5 = Definitely yes*).

Behavioral performance. *Performance* of health behaviors at follow-up was measured using a 3-item scale (i.e., "Over the past three months, how many weeks did you do [behavior]?", "How frequently did you do [behavior] each week over the last three months?"; *1 = never* to *5 = always*, "Over the last three months, I did [behavior] each week; *1 = strongly disagree* to *5 = strongly agree*), mean α = 0.96.

Experienced affect. *Experienced affect* was measured with 2 items (e.g., "Doing [behavior] each day over the past three months was…"; *1 = not enjoyable/unpleasant* to *5 = enjoyable/pleasant*), mean r = 0.84.

Future Motivation. *Future motivation* was measured with 2 items (e.g., "I intend to do [behavior] day over the next three months…"), mean r = 0.92.

Forecasting accuracy. We calculated two measures of accuracy. The first was the *valenced difference* between anticipated and experienced affect for each behavior within individuals, capturing both the magnitude and direction of error. A negative difference indicated underestimation, a positive difference indicated overestimation, and no difference indicated accuracy. The second was the absolute difference between anticipated and experienced affect—henceforth referred to as the *accuracy score*—which captures only the magnitude of error. This score was multiplied by -1 for interpretability (i.e., higher scores indicate greater accuracy).

Analyses

All analyses were conducted on each of the 50 imputed datasets, and the resulting coefficients were then pooled to form a single coefficient. Means and correlations are reported in Table 1 of the Supplemental Materials. We conducted three analyses to assess whether people accurately forecast their affect from performing health behaviors. First, we used the *lme4* package in R to fit a multilevel model with reported affect as the outcome and time of measurement (baseline vs. follow-up) as the predictor. Second, we undertook a chi-square goodness-of-fit test to compare the distribution of accurate, overestimated, and underestimated forecasts. Finally, we plotted the mean and standard errors of the difference between expected and experienced affect for each behavior separately, to ensure that behavior-specific findings were similar to findings observed across behaviors.

Next, we tested the first four possibilities for how forecasting accuracy relates to behavior and future motivation (see Figures 1a, 1b, 1c, and 1d). Using the *mitml* and *lme4* packages in R, we fitted bivariate linear and quadratic mixed effects models with the valenced difference of accuracy (i.e., experienced – expected affect) as the predictor of behavior and motivation. The absence of a linear association, a positive linear association, a negative linear association, and a quadratic relationship would support model 1a, 1b, 1c, and 1d, respectively. We compared model fit by examining the D_2 statistic—which calculates the Wald test for each imputed dataset and pools the χ^2 values[48,50]—to determine whether the bivariate relationships were better characterized as linear versus quadratic. To test the fifth possibility (see Figure 1e) that behavior and motivation are highest when forecasts are both accurate and positive, we fitted two multilevel models with the main effects of level 1 variables and the interaction term between accuracy score (i.e., absolute value of the valenced difference) and anticipated affect. In the first model, behavior was regressed on level 1 variables (RAA variables and habit) and the interaction term as fixed effects. In the second model, future motivation was regressed on level 1 variables (RAA variables, habit, and behavior over the past three months) and the interaction term between accuracy score and anticipated affect as fixed effects. Finally, to predict forecasting accuracy, we conducted a multilevel model to examine the main effects of habit, past behavioral performance, and RAA variables as level 1 fixed factors predictors of accuracy score. Since level 1 predictors were measured repeatedly across eight behaviors for each participant, we group-mean centered the predictors—where each participant represents a "group"—to account for within-person variance. In all our models, participant IDs and behavior-type were entered as random effects to account for our repeated-measures design and between-behavior variability. For comparison with the imputed dataset, we also ran the above analyses on the complete dataset with only participants who completed both waves of the study, which produced similar results (see Figure 1 and Tables 1-2 in Supplemental Materials).

Results

How Accurate are Affective Forecasts about Health Behaviors?

On average, people's anticipated affect about performing health behaviors (M = 3.26, SD = 0.57) was lower than their experienced affect (M = 3.50, SD = 0.59), B = 0.23, SE = 0.02, $p < 0.001$. Thus, participants generally underestimated how good performing health-related behaviors would make them feel. We also calculated the differences in ratings of both anticipated and experienced

enjoyment, and anticipated and experienced pleasantness. This resulted in 240,200 observations of forecasts across 50 imputed datasets and the original dataset, with 8 behaviors for 857 participants. Forecasts were categorized as accurate if the difference was zero, overestimated if the difference was greater than zero (i.e., anticipated affect was greater than experienced), and underestimated if the difference was less than zero (i.e., anticipated affect was lower than experienced). There was a significant difference in the frequency of underestimated, overestimated, and accurate forecasts, χ^2 (2, 240,200) = 11,305, $p < 0.001$. Forecasts were mostly underestimates of affect from health behaviors (43.13%). Overestimates comprised 30.97% of the forecasts and accurate forecasts were the least frequent (25.90%). The plot of the mean and standard errors of the difference between expected and experienced affect for each behavior further indicated that the mean was significantly different from zero in all cases (see Figure 2). Therefore, our analyses indicated across multiple metrics that people underestimate positive affect experienced from performing health behaviors.

Does Forecasting Accuracy Predict Health Behavior Performance and Future Motivation?

Behavioral performance. We first examined whether the relationship between behavior and the valenced accuracy difference followed a linear or quadratic pattern. The plot of behavior by valenced accuracy appeared to indicate a quadratic relationship (see Figure 3a). Indeed, the resulting D_2 statistic favored the more complex (i.e., quadratic) model, $F(1, 795.78) = 37.74$, $p < 0.001$. Furthermore, the plot appeared to suggest that behavioral performance was highest when forecasts were accurate, whereas deviations from accuracy (i.e., overestimation or underestimation) were associated with decreased performance. We therefore regressed behavioral performance on accuracy score (i.e., the absolute value of the difference between experienced and expected affect), RAA variables, baseline intentions, habit, and the interaction between anticipated affect and accuracy score (see Table 1). There was a significant main effect of accuracy score – when people more accurately predicted how these behaviors would feel, they were more likely to perform the behavior, $B = 0.06$, $SE = 0.01$, $p < 0.001$ (see Figure 3c). All RAA variables, except cognitive attitudes ($p = 0.27$) and injunctive norms ($p = 0.36$), significantly predicted behavioral performance (see Table 1). Stronger behavioral intentions ($B = 0.12$, $SE = 0.01$, $p < 0.01$) and habits ($B = 0.04$, $SE = 0.01$, $p < 0.001$) also increased the likelihood of performing the behavior.

Although more accurate forecasts predicted behavior and future motivation, the possibility remains that anticipated affect qualifies the effect of accuracy scores on these outcomes. Indeed, there was a significant interaction between accuracy score and anticipated affect, $B = 0.09$, SE = 0.01 $p < 0.001$ (Model 3, Table 1). Simple slopes showed that more positive anticipated affect predicted greater behavioral performance when participants were more accurate about how they would feel, $B = 0.15$, SE = 0.01, $p < 0.001$. When people were less accurate, more positive anticipated affect was associated with decreased behavioral performance, $B = -0.02$, SE = 0.01, $p < 0.01$ (see Figure 4). Thus, whereas unrealistically positive expectations undermined behavioral performance, positive but realistic expectations about how health behaviors will feel promoted enactment.

Future Motivation. These analyses were repeated for future motivation. The plot of future motivation by valenced accuracy appeared to indicate a quadratic relationship (see Figure 3b), and the D_2 statistic favored the quadratic model, $F(1, 438.78) = 40.33$, $p < 0.001$. The plot suggested that greatest future motivation was associated with accurate forecasts, while both overestimation and underestimation of affect was associated with lower future motivation. Indeed, the multilevel model with accuracy score as the predictor of future motivation—controlling for main effects of RAA variables, baseline intentions, habit, and past behavioral performance—indicated that more accurate forecasts were associated with higher future motivation, $B = 0.10$, SE = 0.02, $p < 0.001$ (see Figure 3d). All RAA variables, except cognitive attitudes ($p = 0.42$) predicted future motivation (see Table 2). Baseline intentions ($B = 0.15$, SE = 0.02, $p < 0.001$) and habit ($B = 0.05$, SE = 0.01, $p < 0.001$) also predicted higher future motivation.

The interaction term between accuracy score and anticipated affect also proved significant, $B = 0.13$, SE = 0.01, $p < 0.001$. Simple slopes analyses showed that anticipated affect predicted future motivation when participants were more accurate ($B = 0.23$, SE = 0.02, $p < 0.001$) but not when they were less accurate ($B = -0.04$, SE = 0.01, $p = 0.23$) (see Figure 4). This indicated that people were more motivated when they held positive and realistic affective expectations.

Discussion

The present study examined the role of affective forecasting in health behavior change. Across eight health-related behaviors, we observed significant discrepancies between anticipated and experienced affect. Participants, on average, reported experiencing higher positive affect than they anticipated, and there was a greater proportion of underestimated forecasts (43.13%) than overestimated (30.97%) or accurate (25.90%) forecasts. Why did people underestimate how good it would feel to perform health behaviors? One possibility is that since affect itself is not stored in memory but reconstructed through retrieved memories about particular aspects of an event or behavior, recall of past affective experiences is subject to bias[47]. Because negative affect tends to be more salient than positive affect[48], negative affect associated with certain aspects of performing health behaviors (e.g., experiencing discomfort from effortful physical activity) can make those aspects more accessible during recall[49] compared to other components of the behavior that may elicit positive affect (e.g., doing something to benefit health). Consequently, people may overweight negative feelings that come to mind and neglect positive feelings that accrue following

behavioral performance[15], thereby forming overly negative predictions.

We observed that these inaccurate predictions undermined health behavior change. The accuracy-behavior and accuracy-motivation relationships were characterized by an inverted U-shaped curve, where both underestimation and overestimation of positive affect predicted lower behavioral performance and future motivation. Thus, affective forecasting errors—regardless of direction—hindered motivation and action. This finding aligns with prior research showing that skewed forecasts decreased persistence in a lab task[36]. Underestimation may reduce health behaviors due to a lack of motivation to perform the behavior[20], and overestimation can create unrealistically high expectations that may lead to disappointment when unmet[50]. These findings suggest that accurate forecasts could potentially promote health behavior change.

Importantly, however, forecasting accuracy qualified both the anticipated affect-behavior and anticipated affect-future motivation relationships: positive and realistic forecasts were associated with greater behavioral performance and future motivation. Positive but unrealistic forecasts, on the other hand, were unrelated to—or reduced—performance and future motivation. This is consistent with prior studies that observed the impact of promoting realistic and positive expectations for goal-striving[38-39]. There are several potential explanations for this finding. First, realistically positive expectations serve to calibrate optimism about health behaviors. For example, someone can expect to feel good about eating fruits and vegetables but recognize it may not be as enjoyable as eating fast food. The positive expectation motivates behavior[6], and the alignment with reality helps reduce the possibility of disappointment. Second, knowing what to expect could facilitate affect regulation. For instance, if someone accurately anticipates feeling displeasure from physical activity, they can take steps to regulate this feeling (e.g., watching shows while on the treadmill[54]). Further research is needed to test these potential mechanisms.

The present findings contribute to both the affective forecasting and health behavior change literatures. Wilson and Gilbert (2003, p. 346) stated that decision-making fundamentally concerns selecting desired future affective states, and "predictions about future events are good proxies for predictions about feelings *only if people know for sure how much happiness these events bring*." Despite this emphasis on accuracy, the affective forecasting literature has not examined how accurate forecasts relate to behavioral outcomes. Our research addressed this gap by highlighting the motivational and behavioral implications of accurate forecasts. We found that forecasting inaccuracies have detrimental effects, as both overestimation and underestimation negatively impacted behavioral performance and future motivation. The more accurate people's forecasts were, the more they engaged in health behaviors and were motivated to continue doing so. Thus, affective forecasting research is important not merely for documenting forecasting errors, but also because such errors have significant implications for motivation and behavior.

Similarly, traditional health behavior change theories such as the RAA focus exclusively on the importance of increasing positive affective expectations, neglecting to account for the accuracy of these expectations. If people generally underestimate positive affect from health behaviors—as we observed in this study—it is no surprise that interventions to promote expected positive affect will increase motivation and behavior[27]. But such interventions fail to consider how people will really feel from performing these behaviors, risking the inflation of positive expectations. Overestimating positive affect, as we observed, decreases behavior and future motivation. In other words, hoping to feel good, on its own, is insufficient to promote health behavior change. Expectations about positive affective outcomes need to be realistic.

Our research also highlights forecasting accuracy as a potential target for health behavior change interventions. Beyond promoting positive expectations, interventions could encourage keeping these expectations realistic, for instance, by encouraging people to consider how quickly they adapt to affective events[14]. This addresses immune neglect—our tendency to underestimate how well we cope with affect—which contributes to forecasting errors[16]. Another intervention could involve having people actively document how they expected to feel versus actual felt after performing health behaviors, which could help adjust future predictions. Finally, the present findings align with the core tenet of fantasy realization theory[51]—that indulging a positive future needs to be contrasted with negative reality to promote motivation and action. Thus, future research could test mental contrasting as a strategy for promoting positive but realistic affective expectations[51].

Limitations of this work should be noted. First, we conducted only one study—as a first investigation of how forecasting accuracy influences health behaviors—and the behaviors were presented to all participants in fixed order. Consequently, we cannot rule out potential order effects that may have influenced the present findings. Additional studies, with a broader range of health behaviors presented in random order among larger and more diverse samples are needed to replicate our findings. It was also the case that the present study used two time-points over three months; studies using a larger number of timepoints and longer follow-up periods would be valuable for two reasons. First, many health behaviors must be performed repeatedly over extended periods to achieve meaningful health benefits, so increasing the temporal distance between baseline and follow-up is important for assessing the reproducibility of these findings over longer durations. Second, incorporating additional time points would allow researchers to examine how affective forecasting accuracy influences behavioral maintenance over time. Another limitation is that the present study used self-report measures of behavioral performance which can be subject to memory or social desirability biases and deployed an observational design that precluded causal inferences about the relationship between realistically positive forecasts and

health behavior change. Future studies should strive to obtain objective measures of behavior (e.g., direct observation) and experimentally manipulate both the accuracy and positivity of forecasts to examine how these variations influence subsequent behavior and motivation. Our work also examined affect more generally and did not take separate measures of positive and negative affect or measure discrete emotions (e.g., happiness, sadness, anger, regret). Given that theories in positive psychology speak to the important role of both positive affect and positive discrete emotions in health behavior change[53], a greater range of affective variables should be explored in future work. In addition, it could also be argued that our measure of experienced affect—we asked participants how it felt to perform the behaviors over the past three months—was in fact a measure of remembered affect. However, studies have found that remembered affect has a greater influence on behavior than experienced affect[19,52], which supports the relevance of the measure used in the present study. Further research is needed to determine whether the current findings can be replicated by using ecological momentary assessment designs that capture measures of affect taken before, during, and after performance of respective health behaviors. Finally, future research should investigate potential mechanisms (e.g., disappointment) through which forecasting accuracy influences health behaviors.

In conclusion, the present research highlights the significant role of affective forecasting in health behavior change. On average, people underestimated how good they would feel from performing various health-related behaviors. Such inaccuracies had significant implications for health behaviors, as both underestimation and overestimation negatively impacted behavioral performance and future motivation. This suggests that traditional intervention strategies aimed merely at increasing anticipated positive affect—with little regard for accuracy of these forecasts—may not be sufficient to promote health behavior change. Instead, we demonstrate that realistically positive forecasts—that balance positive expectations and accuracy—may be a promising means for promoting health behaviors, offering a new direction for future health behavior research and interventions.

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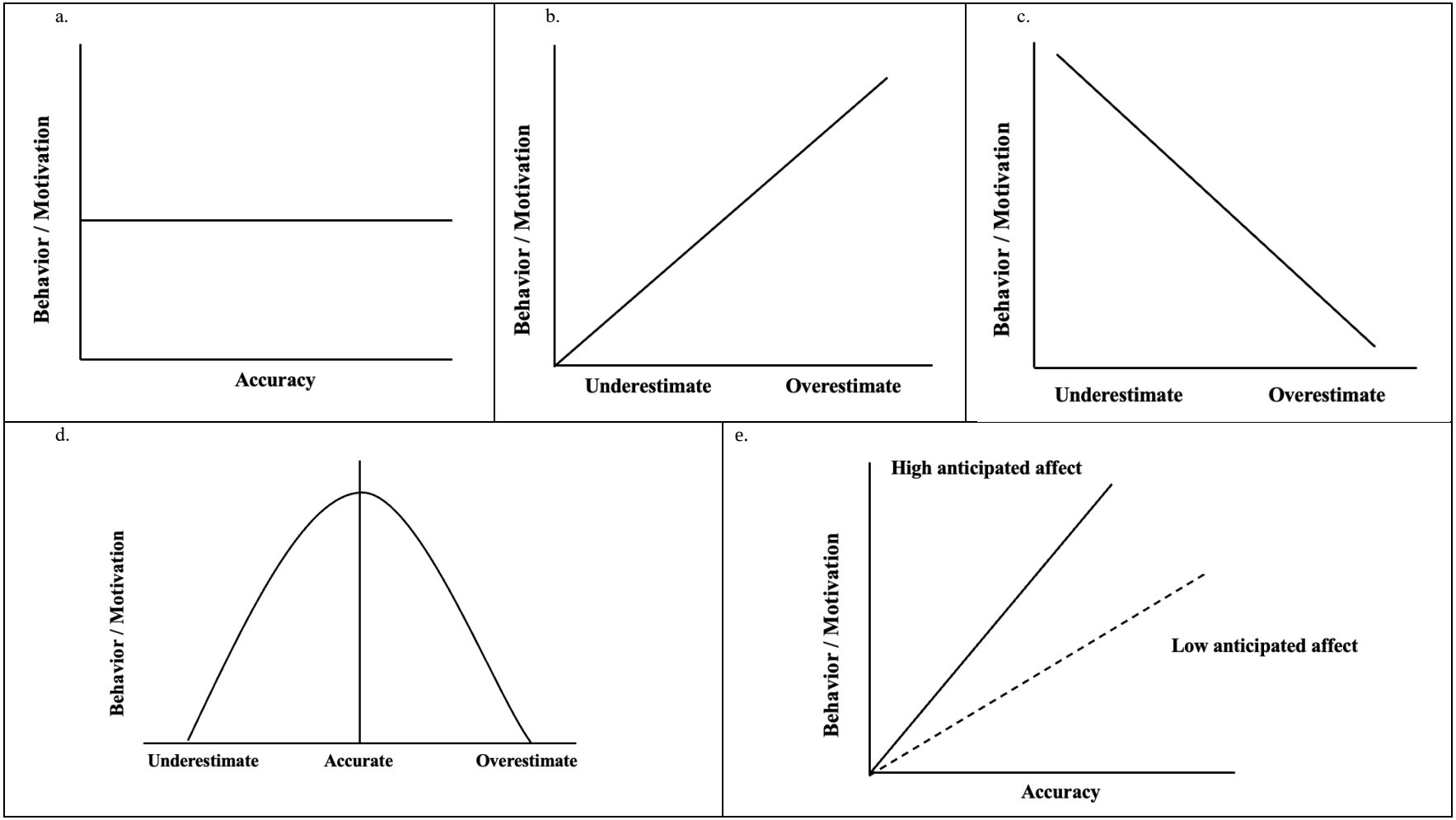
Table 1. Multilevel Regression of Behavioral Performance on Predictor Variables

Predictor	**Model 1**			**Model 2**			**Model 3**		
	b	**SE**	***p***	**b**	**SE**	***p***	**b**	**SE**	***p***
Intercept	-0.01	0.05	0.83	0.06	0.05	0.272	0.05	0.05	0.34
Anticipated affect	0.01	0.01	0.493	-0.002	0.02	0.865	0.14	0.02	< .001
Cognitive attitude	0.04	0.03	0.244	0.04	0.03	0.274	0.04	0.03	0.265
Descriptive norms	0.07	0.01	< .001	0.07	0.01	<.001	0.07	0.01	< .001
Injunctive norms	0.01	0.02	0.433	0.01	0.02	0.384	0.01	0.02	0.356
PBC	0.04	0.02	0.027	0.04	0.02	0.020	0.04	0.02	0.028
Habit	0.04	0.01	< .001	0.07	0.01	< .001	0.04	0.01	< .001
Intention	0.12	0.02	< .001	0.12	0.02	< .001	0.12	0.01	< .001
Forecasting Accuracy				0.05	0.01	<.001	0.07	0.01	< .001
Forecasting accuracy X Anticipated Affect							0.09	0.01	< .001
Mean R^2 (Total)		0.33			0.33			0.35	

Table 2. Multilevel Regression of Future Motivation on Predictor Variables

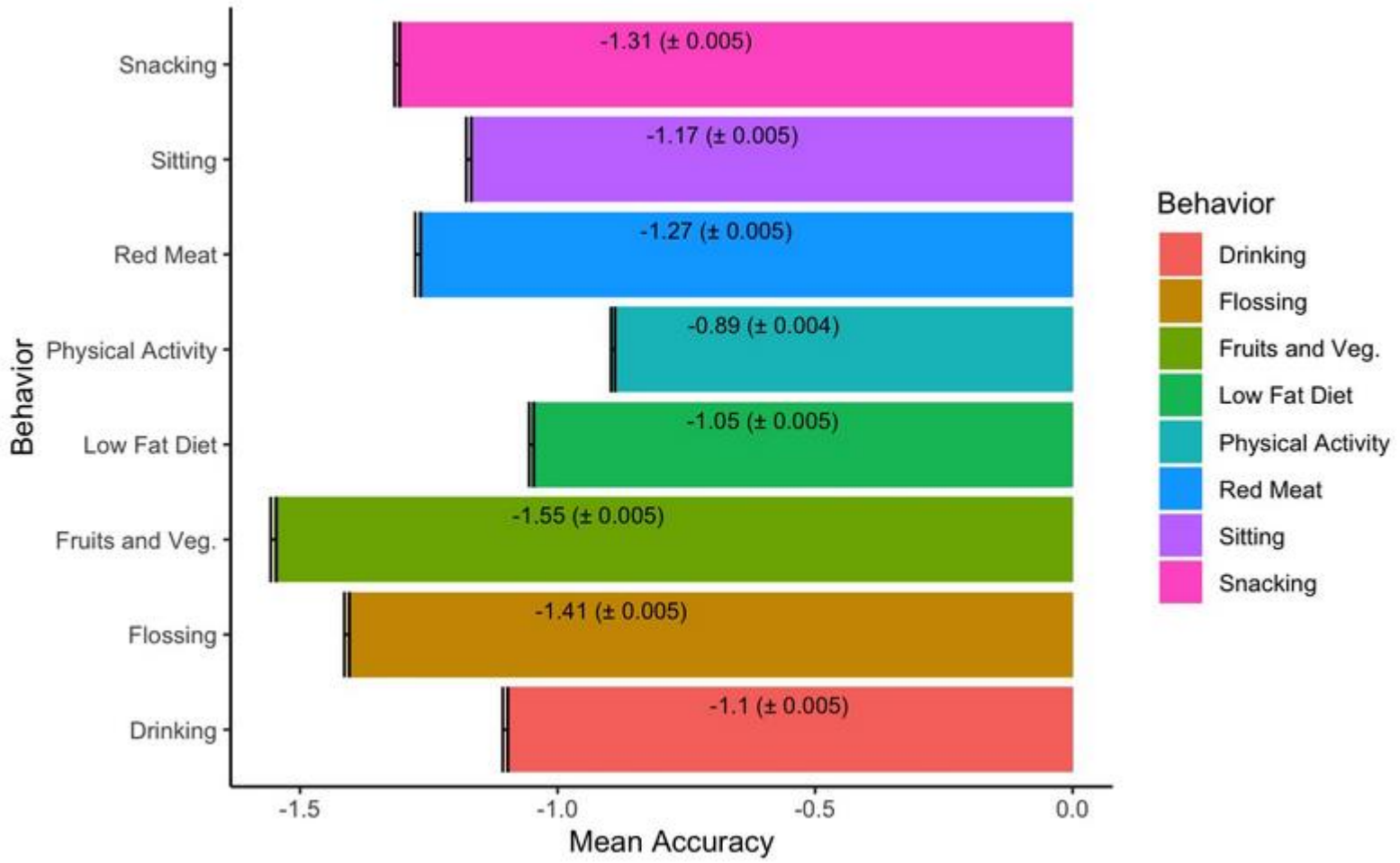
Predictor	**Model 1**			**Model 2**			**Model 3**		
	b	**SE**	***p***	**b**	**SE**	***p***	**b**	**SE**	***p***
Intercept	3.30	0.09	< .001	3.39	0.10	<.001	3.39	0.09	< .001
Anticipated affect	-0.01	0.02	0.72	-0.03	0.02	0.207	0.20	0.03	< .001
Cognitive attitude	0.04	0.05	0.39	0.04	0.05	0.426	0.04	0.05	0.416
Descriptive norms	0.13	0.02	< .001	0.11	0.02	<.001	0.10	0.02	< .001
Injunctive norms	0.10	0.02	< .001	0.09	0.02	<.001	0.10	0.02	< .001
PBC	0.08	0.03	0.002	0.08	0.03	0.001	0.08	0.03	0.002
Habit	0.05	0.01	< .001	0.10	0.01	<.001	0.05	0.01	< .001
Baseline Intentions	0.15	0.02	< .001	0.07	0.02	<.001	0.15	0.02	< .001
Forecasting Accuracy				0.08	0.02	<.001	0.09	0.02	< .001
Forecasting accuracy X Anticipated Affect							0.13	0.01	< .001
Mean R^2 (Total)		0.36			0.36			0.38	

Figure 1. Potential Relationships Between Forecasting Accuracy and Behavior and Motivation



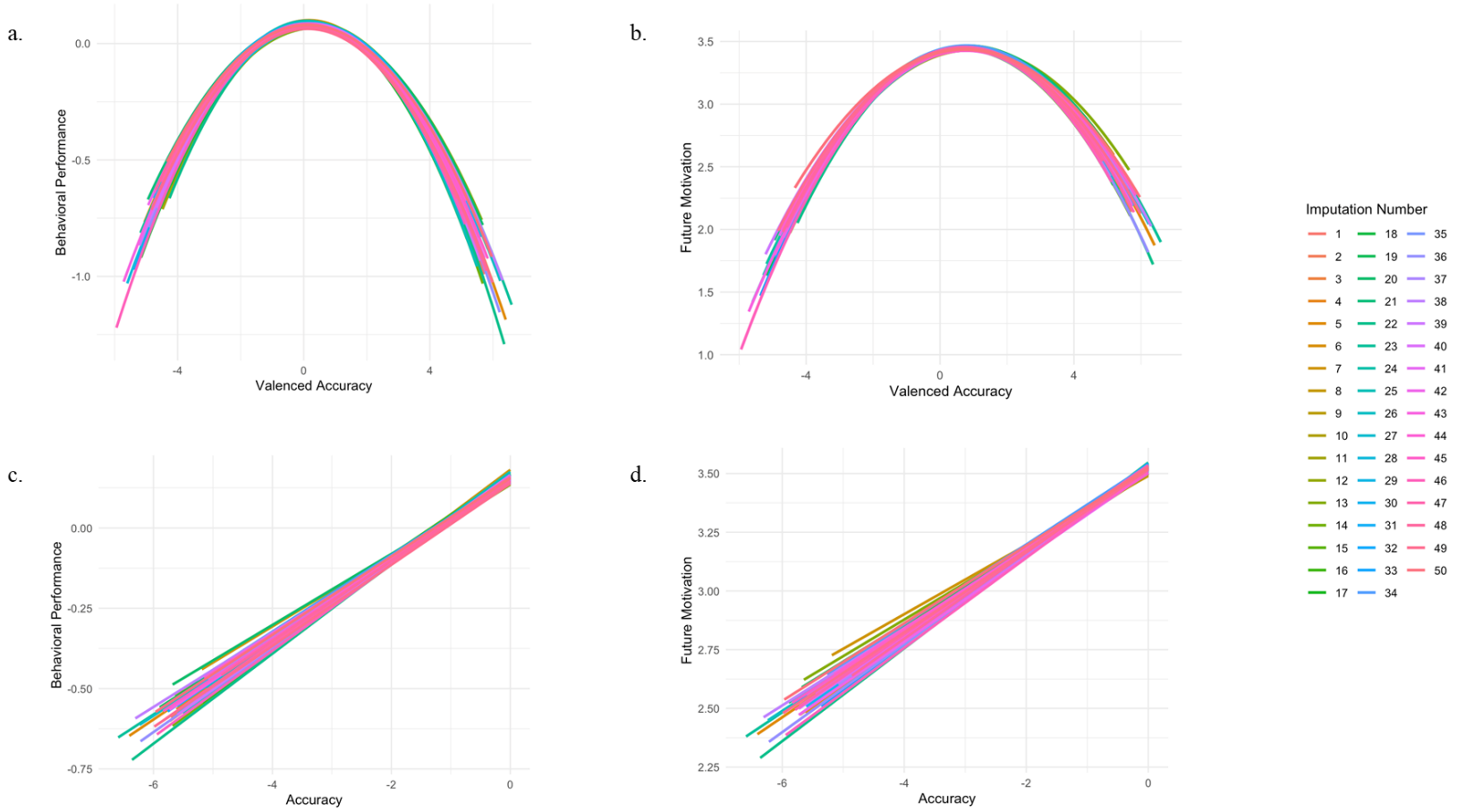
Note. Panels indicate (a) no accuracy-outcome relationship; (b) overestimation promotes outcomes (positive linear relationship); (c) underestimation promotes outcomes (negative linear relationship); (d) accuracy promotes outcomes (quadratic relationship); (e) positive but realistic expectations promote outcomes (interaction between accuracy and anticipated affect).

Figure 2. Comparison of Anticipated and Experienced Affect and Distribution of Forecasting Accuracy



Note. Forecasting accuracy in this figure is computed as anticipated affect minus experienced affect. Values are means and standard errors.

Figure 3. Predicting Behavior and Future Motivation from Differences between Anticipated and Experienced Affect and Forecasting Accuracy Scores



Note. Panels a and b indicate the quadratic relationship between valenced accuracy and behavior and future motivation, respectively. Panels c and d indicate the linear relationship between accuracy (absolute difference between expected and experienced affect) and the outcomes.

Figure 4. Behavioral Performance and Future Motivation by Anticipated Affect and Forecasting Accuracy