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Differentiating hope from optimism by examining self-reported appraisals and linguistic content

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ABSTRACT

Even though hope and optimism are both positive states about desired future events, we hypothesized that their appraisals differ. Specifically, we hypothesized that hope would be associated with greater appraisals of uncertainty, importance, effortful action, morality, unpleasantness, and fear than optimism. Based on action identification theory, we also hypothesized that hope would encourage using more concrete language than optimism. In three experiments, respondents wrote about possible future events that instilled feelings of either hope or optimism. We assessed appraisals via respondents' self-reports and by coding events for appraisal-relevant language. An internal meta-analysis of three experiments revealed that, compared to optimism, hope involved more uncertainty, importance, effortful action (self-reports only), unpleasantness, fear, and concrete language, but not more morality. These data suggest that even though hope arises when the distal future seems more uncertain and unpleasant, hope might help people obtain their goals by signaling importance, effort, and promoting concrete thinking.

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Hope; optimism; emotion; appraisal; concrete language

When people think about positive future events, they might experience either hope or optimism. Both states operate as vital psychological resources, helping people pursue their goals, attend to information, adapt, and recognize sources of social support (Aspinwall & Leaf, 2002). Yet, hope differs from optimism, because hope arises even when the future seems bleak (Lazarus, 1999). Bishop Desmond Tutu once described their difference by saying, 'Optimism is a much lighter thing. Hope is being able to see that there is light despite all of the darkness' (as interviewed by Solomon, 2010, p. MM12). People intuitively realize this difference, as reflected by the phrase, 'I feel hopeful, but not optimistic.' Nonetheless, researchers often use the terms interchangeably and gloss over key differences between these states (for discussion see Bruininks & Malle, 2005; for examples see Baumgartner, Pieters, & Bagozzi, 2008; Massey, Simmons, & Armor, 2011; Winterich & Haws, 2011). We argue that even though hope and optimism both reflect positive anticipatory states, they differ in the degree to which various appraisals underlie them and therefore are not interchangeable. Understanding these potential appraisal differences sheds light not only on what might cause these states to arise, but also on how these states might shape the way in which people view and try to achieve their desired future events.


To examine whether hope and optimism differ, we conducted three experiments. In them, respondents described future events that they felt either hopeful or optimistic about. As in prior work on appraisals, we then examined participants' self-reported appraisals of these events. We also coded respondents' use of appraisal-relevant words, a technique that has not been used before to assess emotional appraisals. We then conducted an internal meta-analysis across these experiments to provide a comprehensive picture of how hope and optimism might differ (see Goh, Hall, & Rosenthal, 2016; McShane & Böckenholt, 2017).

Hope and optimism as affective states

In this paper, we conceptualize hope and optimism as *momentary affective states* that arise when people think about the potential for a positive future event. This perspective departs from past work, which often views hope and optimism as traits (what it means to *be* a generally hopeful or optimistic person; Alarcon, Bowling, & Khazon, 2013; Carver, Scheier, & Segerstrom, 2010; Peterson, Gerhardt, & Rode, 2006; Snyder, 2002) rather than as states (what it means to *feel* hopeful or

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optimistic at the moment). It also departs from past work in that we do not focus on how hope might function as cognitive set – a way of thinking (Snyder, 2002). For instance, Snyder's (2002) hope theory argues that hopeful people exhibit two types of thinking: (1) agency thinking, because they have the will to get things done and (2) pathways thinking, because they can identify the means to achieve their goal. We agree that hope can motivate a way of thinking, but in this paper, we focus on hope as a momentary way of feeling (see Aspinwall & Leaf, 2002).¹

By viewing hope and optimism as affective states, we can then use emotional appraisal theory as a lens to understand potential differences between these states. Specifically, we use appraisal theory to predict which subjective perceptions of situations, or appraisals, are likely to be associated with hope and optimism (Smith, Tong, & Ellsworth, 2014). These appraisals, in turn, can guide how hope and optimism shape people's actions to achieve their goals.

Appraisal theory

To identify how hope and optimism might differ, we use the framework of appraisal theory. While there are many appraisal theories, there is also substantial conceptual overlap (Smith & Ellsworth, 1985). Thus, we focused our review on work concerning the appraisals that might underlie hope and/or optimism (Arnold, 1960; Averill, Catlin, & Chon, 1990; Dan-Glauser & Scherer, 2011; Frijda, Kuipers, & Ter Schure, 1989; Lazarus, 1991; Roseman & Evdokas, 2004; Roseman, Spindel, & Jose, 1990; Scherer, 2005; Smith & Ellsworth, 1985). This review of the various appraisal theories suggested five dimensions on which hope and optimism might differ: uncertainty, importance, effortful action, morality, and pleasantness, as well as the emotion of fear. Below, we delineate the background for each of these dimensions.

It is also important to note that even though many researchers have speculated about how feelings of hope and optimism might differ, we found only three studies that empirically compared them, and these studies only tested some of the potential appraisal dimensions (Bruininks & Howington, 2018; Bruininks & Malle, 2005; Bury, Wenzel, & Woodyatt, 2016). Below, we discuss what these three studies, as well as what prior research on only hope or optimism, have found. Our goal is to not only replicate past work, but also to shed light on mixed results and examine untested dimensions to better understand how hope and optimism might differ.

Uncertainty

Hope arises when people feel uncertain about a desired future outcome (Clore, Ortony, & Foss, 1987; Frijda et al., 1989; Lazarus, 1991; Roseman et al., 1990; Smith & Ellsworth, 1985). Researchers' opinions diverge concerning the degree of subjective uncertainty that underlies hope. Averill and colleagues (1990) argued that hope should be prudent, in that people should hope for things that feel uncertain, but not too uncertain. There should be a reasonable chance of obtainment (Smith & Ellsworth, 1985). Other researchers have argued that hope can arise if there is some chance, even if it is just above zero, to achieve the goal (Bury et al., 2016; Stotland, 1969). Nelissen (2015) viewed hope as signaling that an event is possible rather than probable. Lazarus (1999) argued that hope might be useful in very uncertain situations, because it signals that a good outcome might happen despite the high likelihood of a negative outcome. Under Snyder's model (2002), hope can arise for goals that have either a high or low probability of attainment. In contrast, optimism stems from expecting the desired outcome to arise (Shaver, Schwartz, Kirson, & O'Connor, 1987). There is little uncertainty. In support of this difference, research has found that hope involves more uncertainty than optimism (Bruininks & Malle, 2005; Bury et al., 2016). Thus, we sought to replicate this finding by investigating the uncertainty hypothesis: hope is associated with more uncertainty about the potential future event than is optimism.

Importance

Averill et al. (1990) argued that people's hopes take priority over other wants and desires – people hope for things that are important and vital to their interests (Bury et al., 2016; Frijda et al., 1989). Hope reflects a highly personally relevant goal (de Mello, MacInnis, & Stewart, 2007; Smith et al., 2014). In contrast, people can feel optimistic about relatively trivial events (Averill et al., 1990). Consistent with this logic, people rated events as more important when they were about hope than optimism (Bruininks & Malle, 2005), and importance appraisals were correlated with hope, but not with optimism (Bruininks & Howington, 2018). Thus, we sought to replicate this finding by examining the importance hypothesis: hope is associated with placing greater importance on the potential future event than is optimism.

Effortful action

Hope also might signal a greater role for effortful action than optimism. According to Averill et al. (1990), hope motivates action and fosters behaviors that move

people closer to their goals (see also: Gottschalk, 1974; Mowrer, 1960; Nelissen, 2015; Smith et al., 2014; Stotland, 1969). In Averill et al.'s (1990) work, respondents described hope as encouraging them to work harder, become better organized, and think more creatively about how to achieve their goals. Smith and Ellsworth (1985) found that hope was associated with higher effort appraisals relative to other positive emotions, such as happiness and pride. Hope should keep a person committed to the goal, even in the face of great difficulty (Smith et al., 2014). In contrast, if one is optimistic, then the event is expected to happen and effort might not be needed. Yet, Bruininks and Malle (2005) found, in their first study, that hope and optimism did not differ in the desire to take action when compared to base rate data.² And, in their second study, they found that optimism, but not hope, was associated with taking action relative to the base rate. Given this mixed evidence, we tested the effort hypothesis: hope is associated with a greater need for effortful action to achieve the future event than is optimism.

Morality

According to Averill et al. (1990), people hope for things that are personally and socially acceptable. Hopes should align with people's moral values. In line with this view, Roseman et al. (1990) argued that hope arose in response to events high in legitimacy – events in which the person deserved a good or bad outcome. This view suggests a moral judgment. In contrast, optimism is neutral with respect to a person's values (Averill et al., 1990), perhaps because optimistic events can be relatively trivial. Researchers, however, have not empirically tested this hypothesis. Thus, we examined the morality hypothesis: hope is associated with viewing morality as being more relevant to the potential future event than is optimism.

Pleasantness

The degree to which a situation is pleasant or unpleasant (i.e. valence) is also a key appraisal dimension (Ellsworth & Sherer, 2003; Frijda et al., 1989; Smith & Ellsworth, 1985). Previous findings conflict on whether hope and optimism differ in their pleasantness. Bruininks and Malle (2005) reported that hoped-for outcomes were associated with less positive affect than optimistic outcomes (but they did not empirically compare them), while Shaver and colleagues (1987) found that hope and optimism were similar in pleasantness. Thus, we examined the pleasantness hypothesis: hope is associated with less pleasantness concerning the potential future event than is optimism.

Fear

Although fear is an emotional state, rather than an appraisal dimension, hope is often accompanied by fear (Roseman et al., 1990; Smith & Ellsworth, 1985). Lazarus (1991) stated that a core theme of hope is 'fearing for the worst, but yearning for better' (p. 122). This fear component is likely related, in part, to the uncertainty surrounding hope. Because optimism is associated with certainty, optimism should lack this fear component. Indeed, this difference in fearing the worst resulted in Averill et al. (1990) writing that '...conceptually hope is more closely related to fear than to optimism' (p. 6). Interestingly, although people have long hypothesized the link between hope and fear (Lazarus, 1991; Mowrer, 1960), we were only able to find one article that empirically examined this link. In it, Bruininks and Howington (2018) examined the lexical nuances associated with the word hope and argued that hope involves 'hoping' and 'feeling hopeful.' They found that hoping was associated with increased fear, but feeling hopeful was not. They also found that optimism was negatively associated with fear. Therefore, we examined the fear hypothesis: hope is associated with more fear about the potential future event than is optimism.

Use of concrete language

In addition to examining whether hope and optimism differ in terms of appraisals, this project examined whether people use different language when describing hopeful or optimistic events. According to action identification theory (Vallacher & Wegner, 1989), people facing challenges describe their actions in a more detailed and concrete way and a less abstract and global way than those not facing challenges. For instance, when drinking coffee from a heavy mug, a person might describe their action using a lower level of action identification that involves more concrete thought, such as 'trying to lift the mug,' rather than using a higher level of action identification that involved more abstract thought, such as 'trying to wake-up.' This lower level of identification can help people focus in on the details needed to solve the problem (Vallacher & Wegner, 1989). Research indicates that uncertainty (Tiedens & Linton, 2001), importance (MacInnis & De Mello, 2005), and unpleasantness (Clore, Gasper, & Garvin, 2001; Forgas & Eich, 2012) are all associated with more concrete, less abstract thought. If hope stems from situations that are appraised as uncertain, important, and unpleasant, and these types of situations promote concrete thinking, then people might use more concrete language when describing

hope events than optimistic events. Indeed, Bruininks and Malle (2005) observed that people felt hope about specific outcomes and were optimistic about more general outcomes, but this observation was not quantitatively tested. Thus, we examined the concrete language hypothesis: hope is associated with using more concrete language to describe potential future events than is optimism.

Related to this issue, we also examined when in these future events might take place. Events in the near future are often represented more concretely than more distal events, because more is known about them (Liberman & Trope, 1998). Indeed, lower action identification levels are associated not only with concrete language use, but also with temporal proximity (Vallacher & Wegner, 2011). Accordingly, it is important to examine whether events about hope might involve more concrete language because they are more proximal or if they might involve more concrete language even though they are more distal. We suspect the latter because Bruininks and Malle (2005) consistently found that hope was associated with more distal events than optimism. If this pattern is found, then the data would suggest that hope might help people solve problems by encouraging concrete thought even when the event is in the distal future.

Overview

We conducted three experiments that employed similar methodologies. In all experiments, respondents wrote about a potential future event that made them feel either hope or optimism. To test the hypotheses, we used two methods. First, consistent with prior studies on appraisals, respondents rated their events on each of the key appraisal dimensions. Second, to move away from self-report, we analyzed participants' narratives for appraisal-relevant language – a novel means of examining appraisals. Specifically, we used Linguistic Inquiry and Word Count (LIWC; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007) software to code for appraisal-related words. Researchers have used text analysis to examine the presence of emotions (Pennebaker, 2011), but our work is the first that we know of to employ text analysis to assess appraisals. Additionally, we used LIWC to examine the use of concrete language.

In addition to examining our hypotheses in each of the three experiments, we conducted an internal meta-analysis to assess the magnitude of the effects across the experiments (see Goh et al., 2016; McShane & Böckenholt, 2017). Internal meta-analysis is useful because when conducting multiple studies, not all

results will be consistent or significant (Schimmack, 2012). Indeed, within our experiments, some nonsignificant findings arose, but typically they were in the predicted direction. Conducting an internal meta-analysis would allow us to focus on the effect size across studies, which provides a more accurate depiction of the nature of these effects and their magnitudes (Goh et al., 2016). The analysis also can increase the power to detect smaller effect sizes that individual studies cannot. We decided to conduct an internal meta-analysis, rather than simply pool the data and code for the different studies, because pooling across within- and between-participants is not straightforward. Also, our theoretical focus was on the similarities across studies, not potential differences between them. Thus, we decided to run Experiment 3 and then focus on the overall, meta-analytic, pattern in the data.

Methods

Participants

Experiment 1

A total of 465 students recruited from the university's subject pool began the study in exchange for course credit. To ensure that only participants who were fully attentive were included in the analyses, participants were dropped for the following reasons: 10 had key missing data, five could not correctly recall whether they wrote about hope or optimism, 25 failed attention checks in which they were asked to mark a particular response, and four had problems within the experimental session (e.g. computer not working). Condition did not alter the likelihood of being dropped, hope: $n = 23$, optimism: $n = 21$, $\chi^2(1) = .09$, $p = .76$). The final sample included 421 people (188 men, 232 women, and 1 transgender), $M_{\text{age}} = 18.97$, $SD = 1.39$, range 18 to 34 years, with 88.8% indicating that English was their primary language. We did not collect racial identity data. We designed Experiment 1 to detect a small to medium effect size: $d = .30$. G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that at $\alpha = .05$, power = .80, and for a two-tailed test, 352 participants were needed. We sought to run at least this number of participants and stopped data collection when we had depleted our allotted participant hours for the semester.

Experiment 2

We recruited 228 undergraduates from the university's subject pool who participated for course credit. The criteria from Experiment 1 were used to drop inattentive respondents from analyses. Three respondents were removed for failing an attention check, seven

omitted a key variable, and four failed to follow the instructions (e.g. they did not write about an event). The final sample consisted of 108 women and 106 men; $M_{age} = 19.21$ years, $SD = 1.86$, range = 18–37, 91.6% indicated that English was their primary language. We did not collect racial identity data. To detect smaller effect sizes with greater efficiency, Experiment 2 employed a within-participants design. A power analysis revealed that to find a within-participant effect (using 2 factors) with an estimated effect size of $f = .10$, $\alpha = .05$, power = .80, and correlation estimated at .50, 200 participants were needed.

Experiment 3

Respondents were 419 undergraduates from the subject pool who participated for course credit. Ten respondents were dropped because they failed the attention check. The final sample included 409 people: 168 men, 241 women, $M_{age} = 18.77$ years, $SD = 1.11$, with 90.2% indicating that English was their primary language. In this experiment, we collected data on self-reported racial identities, which were: 73.3% Caucasian, 13.2% Asian/Pacific Islander, 5.4% Latino/a, 4.6% African American, 3.4% other. Based on the power analysis assumptions from Experiment 1, we sought a sample size greater than 352.

Procedure

Participants completed the experiments in groups of up to 11 people on computers in individual cubicles. Respondents indicated their sex, age, approximate number of psychology studies they had completed, and whether English was their first or primary language. We randomly assigned participants to write about an upcoming event that they were either *hopeful* or *optimistic* about. The instructions in Experiment 1 were:

Please think about your future. What upcoming event do you feel **HOPEFUL (OPTIMISTIC)** will happen?

Please take time to think about why you feel **HOPEFUL (OPTIMISTIC) about the event**. Try to see it in your mind's eye. Then, describe what events are contributing to your feelings as vividly and in as much detail as possible. Please write about the event such that a person reading it may experience it as you experience it. Write about what you feel hope (optimism) about and why.

Please do not write about any event that you do not wish to share or think about. If such an event comes to mind, please think of a different event or move on to the next exercise.

The following questions may help you with this task: What are you feeling? What makes you feel that way? What is important for you? What factors create that feeling? Did that event set off some chain of thoughts or fantasies that enhanced your feelings? What were they?

Please describe the event and your feelings as vividly and in as much detail as you can.

The instructions in Experiments 2 were similar, but they were condensed to save time. Experiment 3 used the same instructions as in Experiment 1, except the opening line was modified to suggest that hope does not necessarily mean that something will happen: 'Please think about your future. What upcoming event do you feel HOPEFUL (OPTIMISTIC) about? That is, you feel that it might (will) happen.'

We did not define hope or optimism, so that respondents would write about events consistent with their own views of these affective states. The experiments were conducted when students had no common major event to look forward to (e.g. holiday or break), because if a highly accessible event were approaching, respondents might write about it rather than write about more idiosyncratic events. Experiments 1 and 3 employed a between-participants design in which respondents wrote about either hope or optimism for five minutes. Experiment 2 employed a within-subjects design in which all respondents wrote about both events (randomly assigned order) for three minutes.

Students wrote about a range of potential positive future events. Common themes in these events were doing well in a class, having a good time at an upcoming event, successfully graduating from college, getting a good job, finding love/getting married, and having a loved-one recover from a serious illness.

Self-reported appraisals

Respondents rated their events on the following dimensions: uncertainty, importance, effortful action, morality, pleasantness, and fear.³ The questions to assess these appraisals were modeled after previous research (see Averill et al., 1990; Frijda et al., 1989; Roseman et al., 1990; Smith & Ellsworth, 1985) and answered on a 1 = *not at all* to 7 = *very much* scale. Because Experiment 2 involved a within-participants design, we modified and dropped some items to ensure that the study could be completed in the 30 minute time allotment. These modifications are noted. The items for each scale follow.

Uncertainty. For your event, how certain do you feel that the desired outcome will happen (reversed)? For your event, how uncertain do you feel about what will

happen in this situation? $\alpha_{Exp1} = .83$, $\alpha_{Exp2} = .66$, $.79$, $.76$, $.69$ (because Experiment 2 involved a within-subjects design, we report the reliabilities for each measure in the following order: hope if recalled first, hope if recalled second, optimism first, and optimism second), $\alpha_{Exp3} = .78$.

Importance. How important is the event to your long-term goals? How much do you think about the event? How central is the event to your personal goals? To what extent do your feelings of hope (optimism) help you stay focused on attaining your goals? If what you hoped for (were optimistic about) did not come true, how devastated would you feel? $\alpha_{Exp1} = .78$, $\alpha_{Exp3} = .82$. In Experiment 2, the last two items were replaced with: In the grand scheme of things, how important is this event relative to other events? and the third item was dropped, $\alpha_{Exp2} = .88$, $.90$, $.85$, $.85$.

Effortful action. In Experiments 1 and 3, the items were: How much effort will be required during the event? How hard will you work to make this event happen? How difficult will it be to make this event happen? To what extent do you feel that there are problems that have to be solved for this event to happen? To what extent do you feel that there are obstacles standing in the path between you and the event? $\alpha_{Exp1} = .82$, $\alpha_{Exp3} = .84$. In Experiment 2, the items were: How much effort will you have to put forth to achieve this event? If obstacles arise, to what extent will you be persistent and keep trying to achieve the event you described? $\alpha_{Exp2} = .67$, $.87$, $.53$, $.76$.

Morality. To what extent do you feel that moral concerns are relevant to feeling hopeful (optimistic) about this event? To what extent do you feel that rules of society are relevant to feeling hopeful (optimistic) about this event? $\alpha_{Exp1} = .68$, $\alpha_{Exp2} = .74$, $.72$, $.72$, $.79$, $\alpha_{Exp3} = .55$.⁴

Pleasantness. In Experiments 1 and 3, the items were: How pleasant is it to think about this event? How unpleasant is it to think about this event (reversed)? $\alpha_{Exp1} = .86$, $\alpha_{Exp3} = .83$. In Experiment 2, the items were: To what extent does thinking about this event make you feel: pleasant? Unpleasant (reversed)? $\alpha = .68$, $.83$, $.62$, $.66$.

Fear. How apprehensive are you that the event will not turn out as you desire? How fearful are you that the event will not turn out as you desire? $\alpha_{Exp1} = .60$, $\alpha_{Exp2} = .77$, $.75$, $.71$, $.61$, $\alpha_{Exp3} = .68$.

Feelings of hope/optimism

To assess how much hope and optimism people felt, in Experiment 2, participants rated their feelings of hope and optimism (To what extent does thinking about this event make you feel hopeful/optimistic?). In Experiment 3, they answered, 'How much hope/optimism do you feel while thinking about this event?' Experiment 1 did not include this assessment.

Temporal distance

To assess temporal distance, respondents answered 'For your event, what best describes when the event will occur or be resolved?' Participants selected one of the following: *Next 24 hours, 2 to 3 days, This week, 2 to 3 weeks, 1 month, 2 to 3 months, 4 to 6 months, A year, 2 to 3 years, 3 to 5 years, 10 years, 20 years, I don't know, It is ongoing with no clear timeframe.*

Additional information

To make sure that respondents were paying attention, embedded within the appraisal measures were attention check items where respondents had to mark a particular answer to the question (e.g. please mark 3 for this question).

In Experiment 2, but not 1 or 3, participants completed the demographics last and wrote a few sentences about happy events at the end of the experiment.

Linguistic inquiry and word count

To examine whether hope changed people's appraisals and use of concrete language relative to optimism, we examined the content of respondents' narratives. We used the Linguistic Inquiry and Word Count (LIWC) 2007 dictionaries to code the data (Pennebaker et al., 2007). Each dictionary contained a list of words, and the LIWC program counted those words and computed a percentage score (e.g. % of total words that count toward that scale). Some of the LIWC dictionaries, like verbs, discrepancies, tentativeness, etc. included the words 'hope' or 'optimism' or some close variant (e.g. hopes, hoped, hopeful, hopefully, helpfulness, hoping, and optimistic). To assure that any effects were due to how people wrote, rather than people merely differing in their use of the words 'hope' and 'optimism' and their variants, we removed these words from the LIWC dictionaries. To keep track of these words, we created a hope dictionary and an optimism dictionary to determine how often these words appeared in the narratives.

Appraisal language. To assess pleasantness, we used the LIWC positive emotions dictionary. To assess uncertainty, importance, effort, morality, and fear, we created our own dictionaries. A list of 433 words that were potentially relevant to these appraisal dimensions was compiled by: a) having two people

review and classify all the LIWC dictionary words as fitting or not into these appraisal dimensions; and b) examining the General Inquirer dictionary (Stone, Dunphy, Smith, & Ogilvy, 1966) to find additional words that may fit into these categories. From this dictionary, words related to 'ought,' 'goal,' 'need,' 'try,' and 'persistence' were added to the list. Then, two people rated whether each word belonged in each of the various dictionaries. Out of the 433 words, raters disagreed on 32 words. These classifications were resolved with a third person.

Concrete language. We used three established coding schemes to assess use of concrete language. First, if hope

promotes concrete thinking, then narratives about hope should contain language that involves making distinctions, for these words reflect a greater focus on contrasts, which is associated with local, concrete thought (Förster, Liberman, & Kuschel, 2008). Following Pennebaker and King (1999), making distinctions was computed by summing the use of exclusive words (e.g. but, without), tentative words (e.g. perhaps, maybe), negations, and discrepancy words. In contrast to Pennebaker and King (1999), we excluded the inclusion words from the scale because the inclusion words did not reliably correlate with the four other measures in Experiment 1. This procedure was then followed in Experiments 2 and 3. Second, hope should promote lower scores on

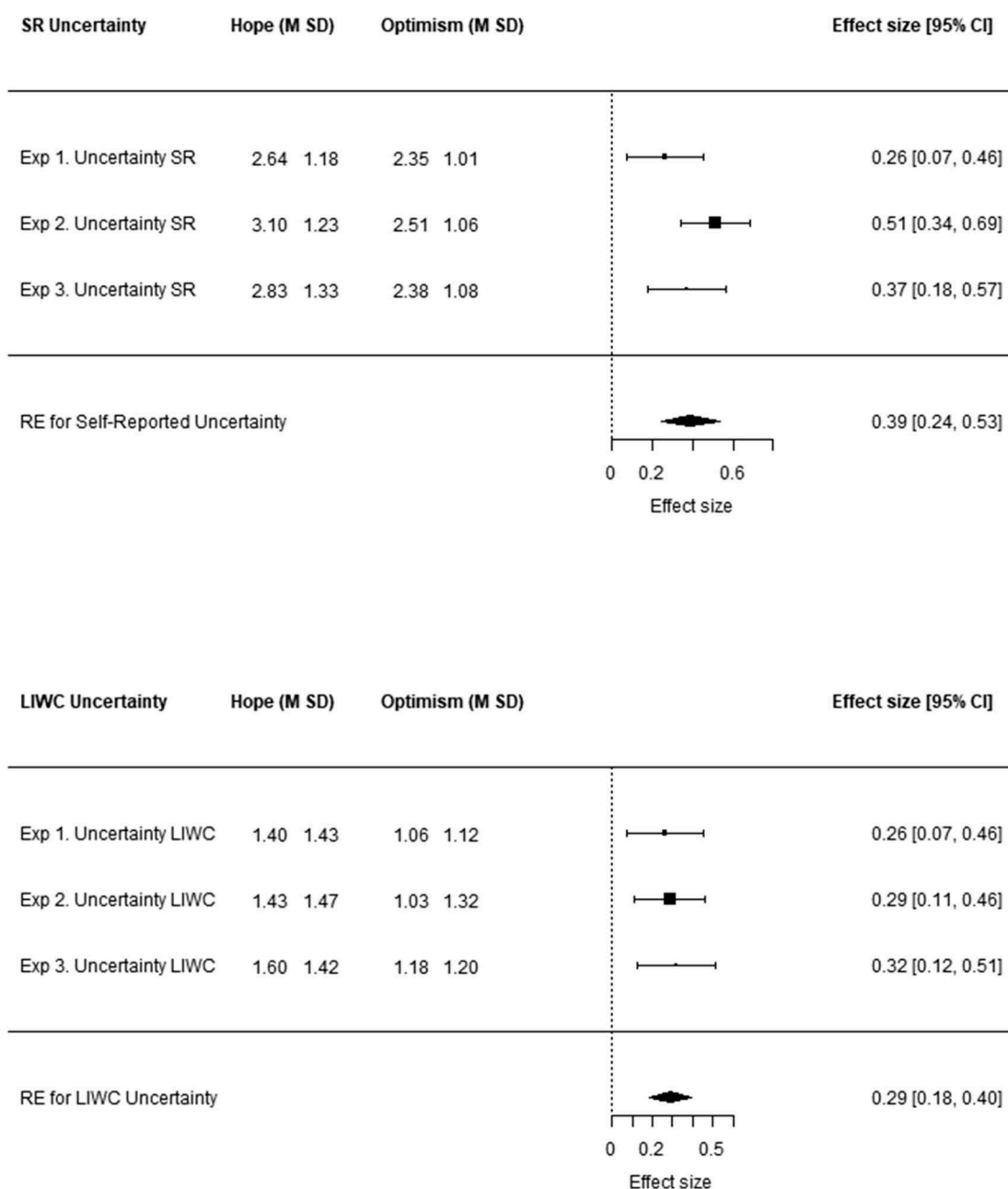


Figure 1. Forest plots of self-report (SR) and LIWC data for uncertainty.

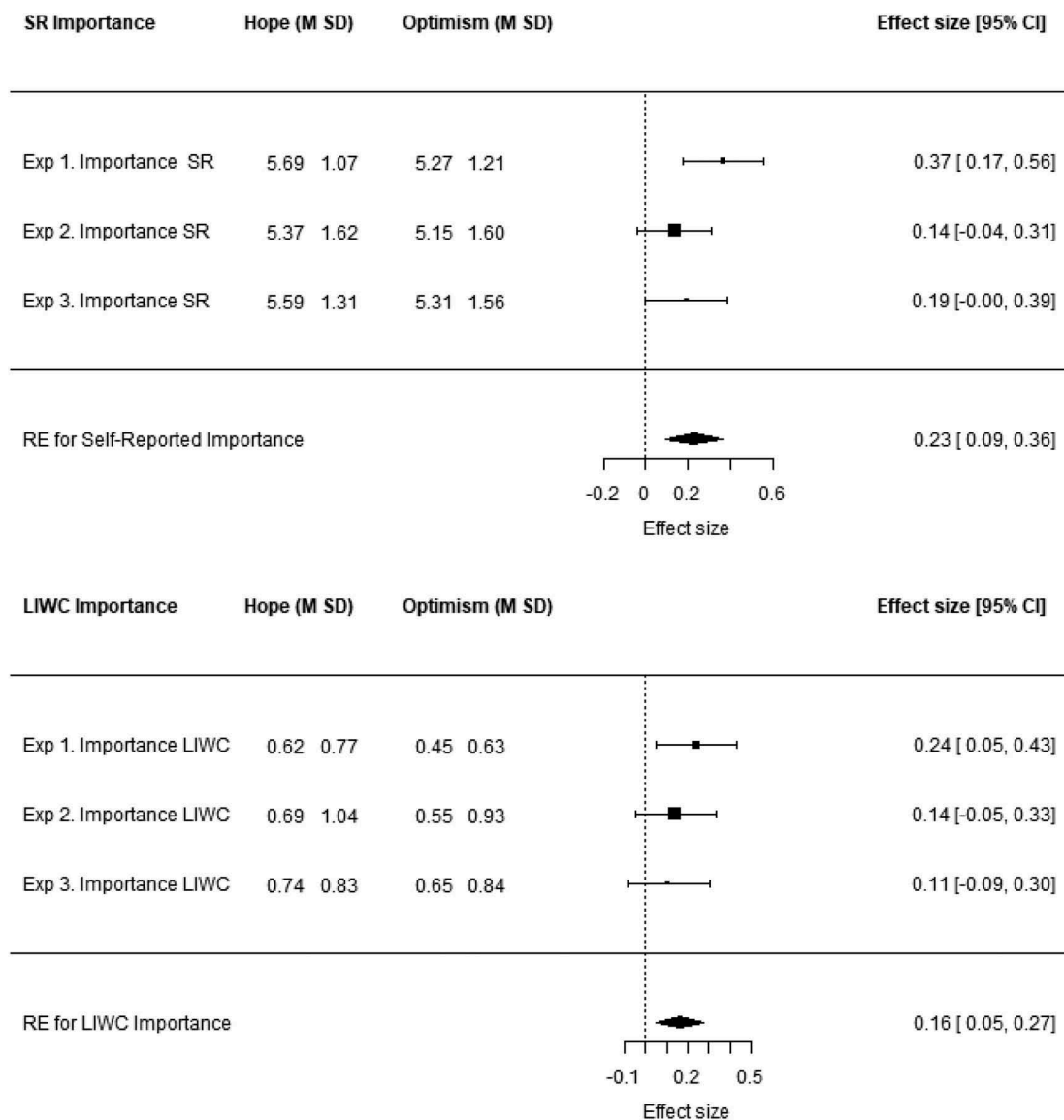


Figure 2. Forest plots of self-report (SR) and LIWC data for importance.

a LIWC measure of psychological distance, because high scores reflect greater distance and more abstract representations (Cohn, Mehl, & Pennebaker, 2004). Following Pennebaker and King (1999), psychological distance was computed by summing the use of articles and words longer than five letters, then subtracting present tense words, words indicating a discrepancy, and first-person singular words. Lastly, hope should reduce scores on the categorical dynamic index (CDI; Pennebaker, Chung, Frazee, Lavergne, & Beaver, 2014), which assesses a style of thinking that reflects both heightened abstract thinking and greater cognitive complexity (Pennebaker et al., 2014). Following Pennebaker et al. (2014), $CDI = 30 + \text{articles} + \text{prepositions} - \text{personal pronouns} - \text{impersonal pronouns} - \text{auxiliary verbs} - \text{conjunctions} - \text{adverbs} - \text{negations}$. In order to have all three variables coded in

the same direction with higher numbers indicating more concrete language, both psychological distance and CDI were reversed by multiplying scores by -1 .⁵

Results

Data analytic strategy

In all experiments, we compared hope to optimism.⁶ Figures 1–9 provide the means, standard deviations, effect sizes (Cohen's d) and 95% CIs (if the confidence intervals do not include zero, then the effect is statistically significant, $p < .05$) for all analyses by each experiment. The supplemental materials provide the p and t values for these comparisons and correlations among the key variables. An internal meta-analysis, using the metafor package in

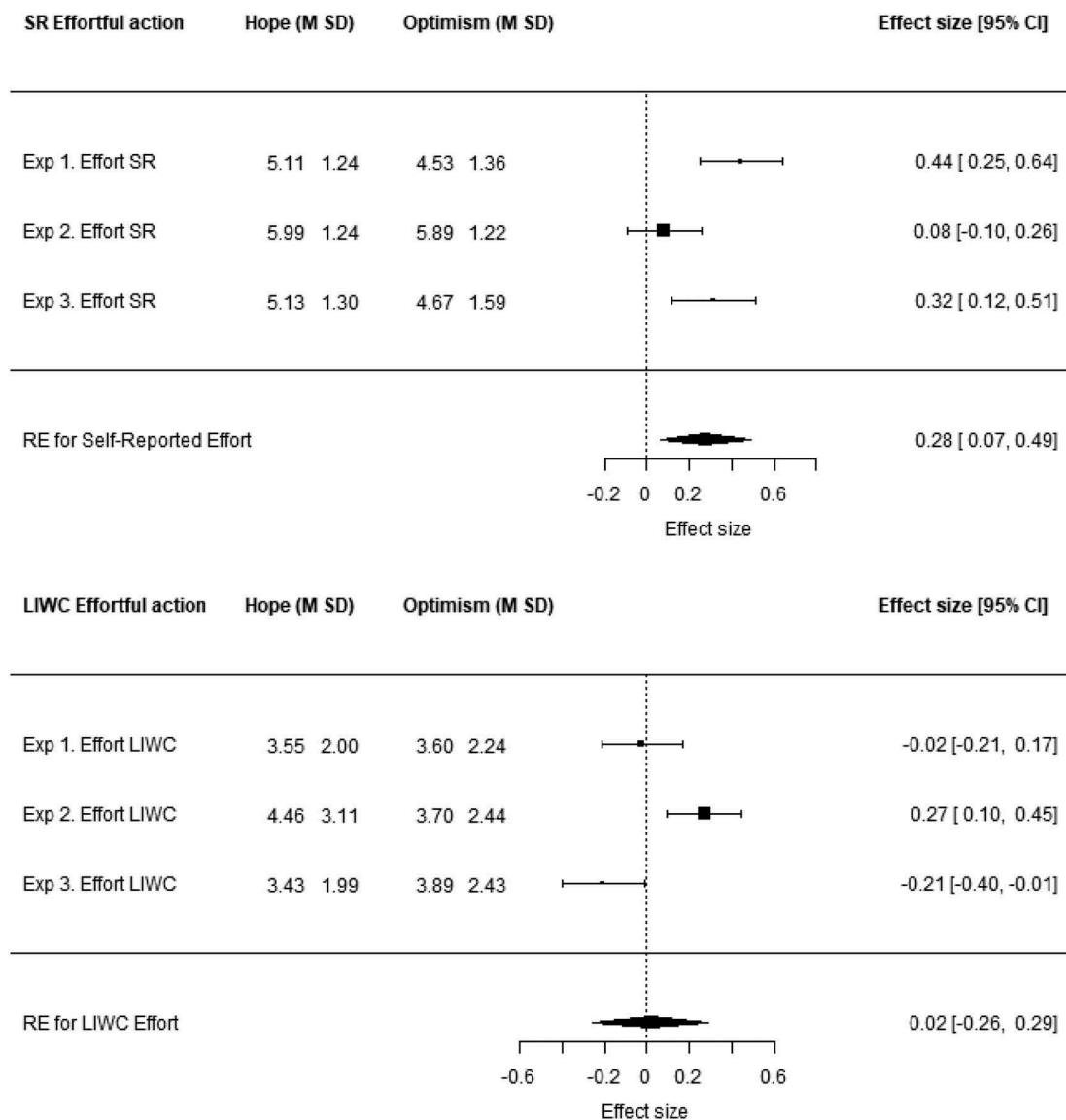


Figure 3. Forest plots of self-report (SR) and LIWC data for effortful action.

R (Viechtbauer, 2010), was conducted on these data. We used a random effects model and standardized mean differences as a basis for the effect sizes. Positive effect sizes (Cohen's d) indicate that hope promotes the effect more than optimism (see Table 1 and Figures 1–9).

Note, when the Q statistic is significant the samples are heterogeneous, in that the samples are more variable than would be expected by chance (see Table 1). The I^2 statistic indicates the proportion of the observed variance that reflects variance in true effect sizes rather than sampling error (see Table 1). Because these analyses are based on only three experiments, both the Q and I^2 should be cautiously interpreted (Goh et al., 2016). When high levels of heterogeneity arose as indicated by a significant Q value, we conducted additional analyses to try to identify its source.

Appraisals

Uncertainty

Consistent with prior research, in both the self-report and LIWC data, people expressed more uncertainty about the potential future event in the hope than optimism condition (Figure 1).

Importance

As predicted, both the self-report and LIWC data indicated potential future events were more important in the hope than optimism condition (Figure 2).

Effortful action

Effortful action was greater when people wrote about events that they hoped for rather than were optimistic about in the self-reported, but not the LIWC, data

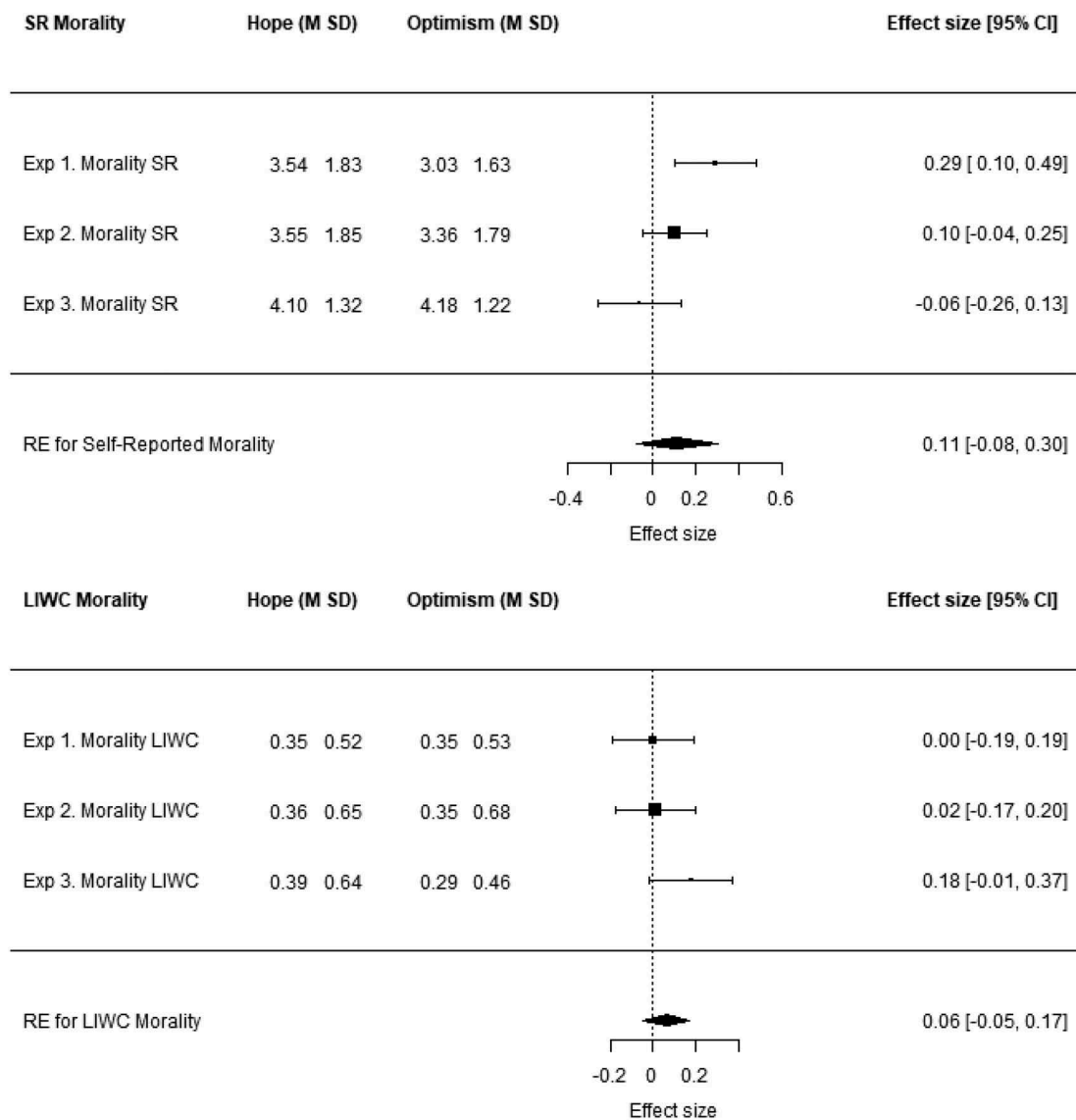


Figure 4. Forest plots of self-report (SR) and LIWC data for morality.

(Figure 3). The self-report data were heterogeneous. Follow-up analyses revealed that this heterogeneity stemmed from Experiment 2. If Experiment 2 was dropped, then there was an even stronger effect on effortful action and no significant heterogeneity, $d = .38$, $z = 5.43$, $p < .00001$, $Q(1) = .85$, $p = .36$. One potential reason for this heterogeneity is that Experiment 2 was within-participants, and respondents might have viewed themselves as always trying hard and did not differentiate their efforts.

The analyses on the LIWC effortful action data revealed no difference between hope and optimism. Because of the heterogeneity, we conducted follow-up analyses to determine if a single study caused this effect. In this case, all combinations of studies still resulted in a null effect and heterogeneity. Overall, we view these findings as indicating that hope and

optimism differed in self-reported need for effortful action, but the findings failed to reject the null hypothesis concerning language about effortful action.

Morality

Hope and optimism did not significantly differ from each other in terms of either self-reported morality or the use of morality-related language (Figure 4). The heterogeneity in the self-report morality data stemmed from Experiment 1 and 3 producing opposite results. Because of the lack of significant effects, these data do not support the morality hypothesis.

Pleasantness

As predicted, hope events were lower in both the self-reported and LIWC pleasantness ratings than optimistic events (Figure 5).

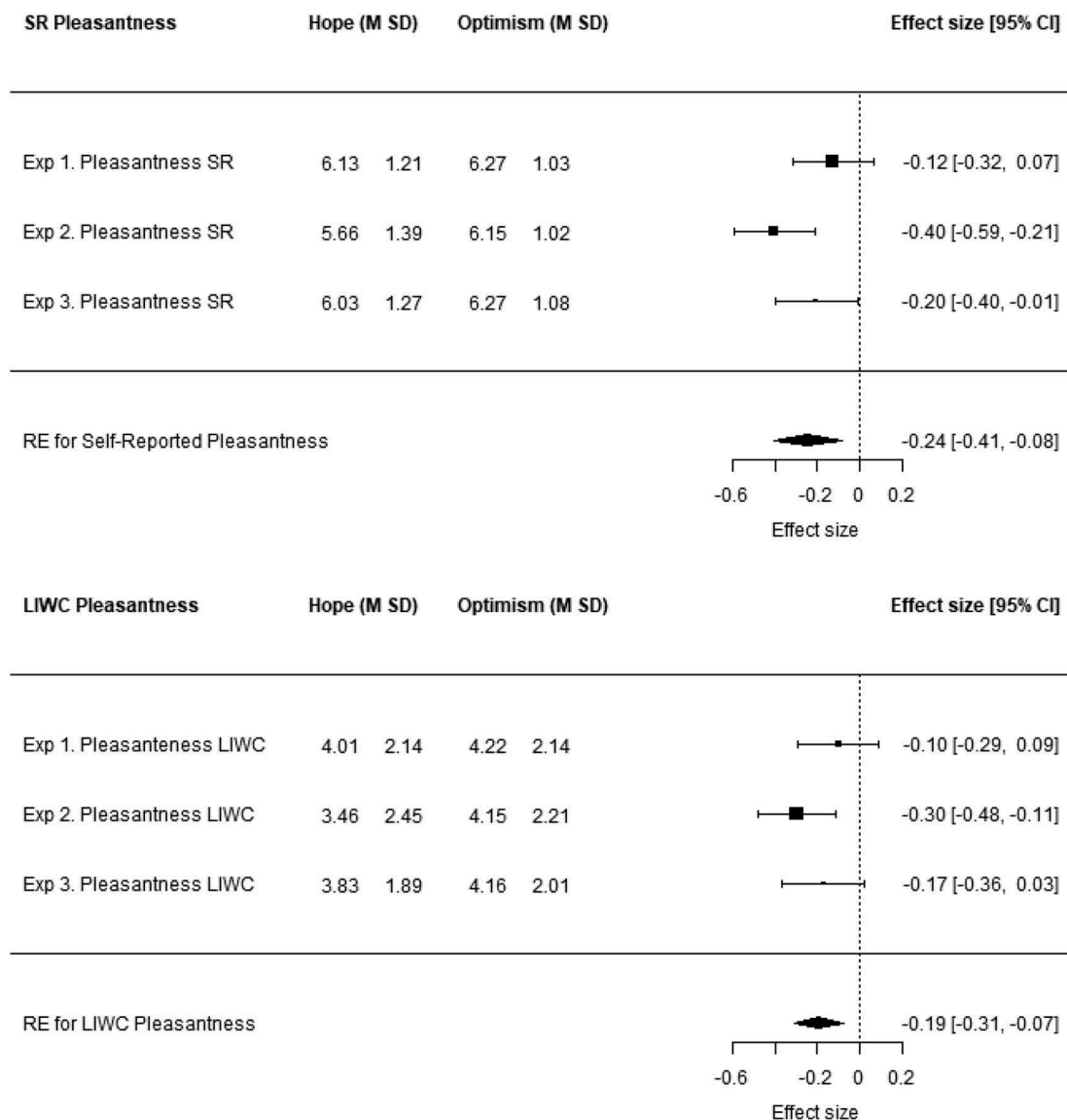


Figure 5. Forest plots of self-report (SR) and LIWC data for pleasantness.

Fear

Consistent with the idea that hope arises when one hopes for the best, but fears the worst, people in hope condition reported more fear than those in the optimism condition (Figure 6). In the self-reports of fear, the heterogeneity was due to Experiment 2. When Experiment 2 was dropped, the fear effect still remained, but was weaker, $d = .21$, $z = 2.95$, $p = .003$, 95% CI [0.07, 0.34], $Q(1) = .15$, $p = .70$.

Temporal distance

Hope events occurred in the more distal future than optimism events (see Figure 7).⁷

Concrete language

Consistent with the hypothesis that hope would promote concrete language, respondents used less psychologically distant language, made more distinctions, and displayed a non-significant trend toward lower CDI scores in the hope than optimism conditions (see Figure 8).

Feelings of hope and optimism

In Experiments 2 and 3, respondents rated how much hope and optimism they felt while thinking about the future event. Interestingly, in our review, we could

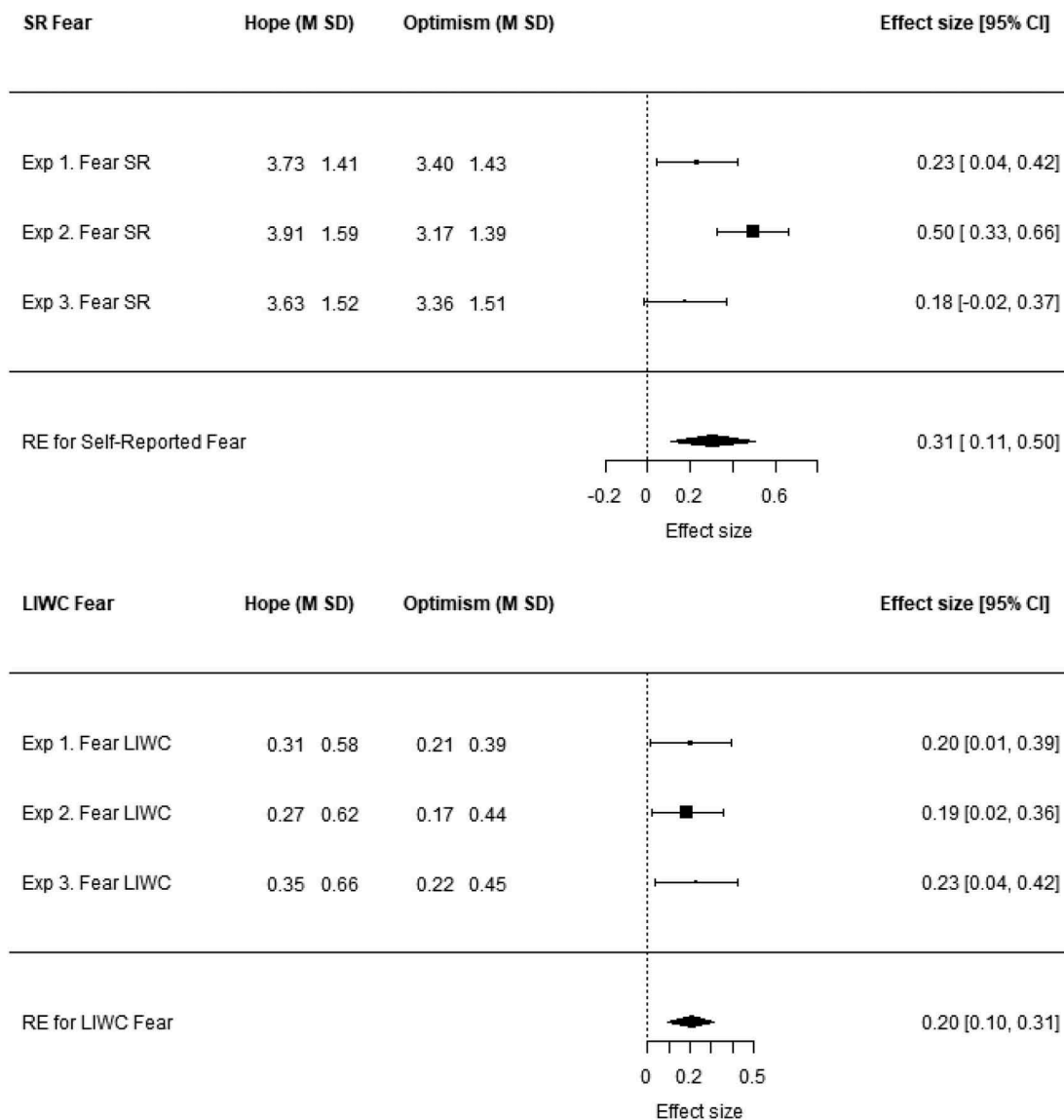


Figure 6. Forest plots of self-report (SR) and LIWC data for fear.

find no study that independently manipulated hope and optimism and then examined the extent to which these feelings might arise to different degrees.⁸ These data indicate that respondents reported similar amounts of hope in both the hope and optimism conditions (see Figure 9). However, they reported less optimism when writing about hope than optimism.

Using the LIWC program, we also examined the percentage of hope and optimism related words used to describe each event. These analyses indicated that respondents in the hope condition used more hope words and fewer optimism words than those in the optimism condition. Analyses revealed that the heterogeneity in optimism LIWC data could not be accounted for by one study. At this point, we are

unable to determine why such heterogeneity existed in the use of optimism words. In sum, even though writing about optimism sparked feelings of hope, it did not result in people using a large proportion of hope-related words.

Discussion

Overall, the results confirm that even though hope and optimism both are about desiring positive future outcomes, they differ in terms of their appraisals. Future events involved more aversive appraisals/emotions (more uncertainty, less pleasantness, more fear) if they were about hope than optimism. These findings shed light on past work. First, they replicated past research indicating that uncertainty is associated more with

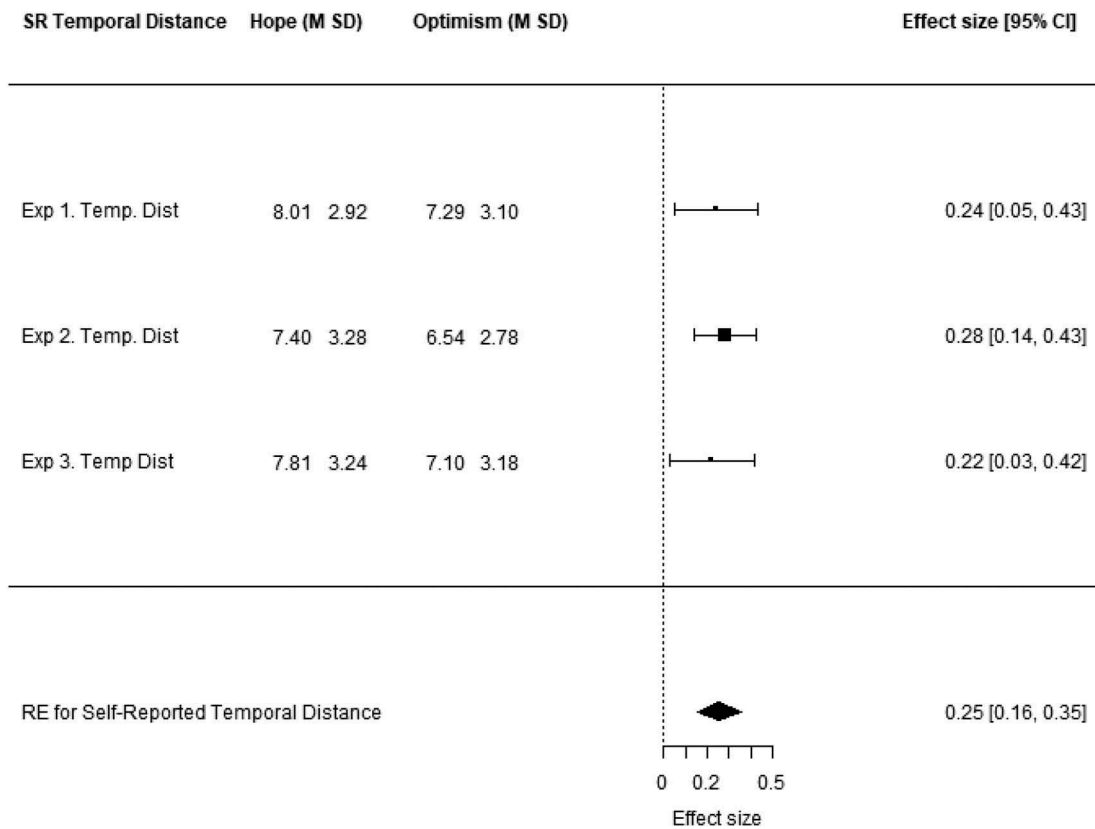


Figure 7. Forest plot of self-reported temporal distance (Temp. Dist.).

hope than optimism. Second, they shed light on mixed results concerning pleasantness by revealing hoped-for events involved less pleasant feelings than optimism events, which aligns with Bruininks and Malle's (2005) results. Lastly, they contributed to the literature by confirming that fear was more prevalent in the hope than optimism conditions. Even though events in the hope condition were appraised more negatively than those in the optimism condition, these events also were associated with appraisals and language that might foster action aimed at conquering adversity. Specifically, relative to optimism events, we replicated the finding that respondents appraised events that elicited hope as more important, a factor that can promote action (e.g. goal-pursuit, Sideridis & Kaissidis-Rodafinos, 2001). The data also shed light on past mixed results by indicating that people reported that more effortful action was needed for the events about hope than optimism. Lastly, these data revealed the novel finding that more concrete language was used in the hope than optimism condition. Viewing potential future events as important, requiring effort, and thinking about them concretely are all processes that could help people conquer adversity.

These experiments also shed light on the magnitude of these effects. The average effect size of the

significant effects was $d = .24$ (which the meta-analysis had power = .98 to detect), ranging from .14 to .39. This effect is smaller than the $d = .30$ that we designed Experiments 1 and 3 to detect (Experiment 2 could detect .20). However, an advantage of a meta-analysis is that by looking across studies, one can have more power to detect smaller effect sizes. The average effect size in these data is not large, but it is notable given the presumed similarity between these two states. Moreover, we designed these experiments to assess people's natural use of the terms hope and optimism. The effects might have been stronger if we had defined hope/optimism or if we had asked respondents to write about what they were *most* hopeful or optimistic about.

In contrast to predictions, hope and optimism did not significantly differ from each other in either the self-reported or LIWC morality data. One reason for this null effect might be that even though people wrote about events that they rated as moral, the events were not about moral issues. This is evidenced by respondents rarely using morality-relevant words (they appeared .29 to .39% of the time). If researchers are interested in morality differences, then it might be useful to design a study in which moral issues would be more likely to be spontaneously generated. In addition, our measure

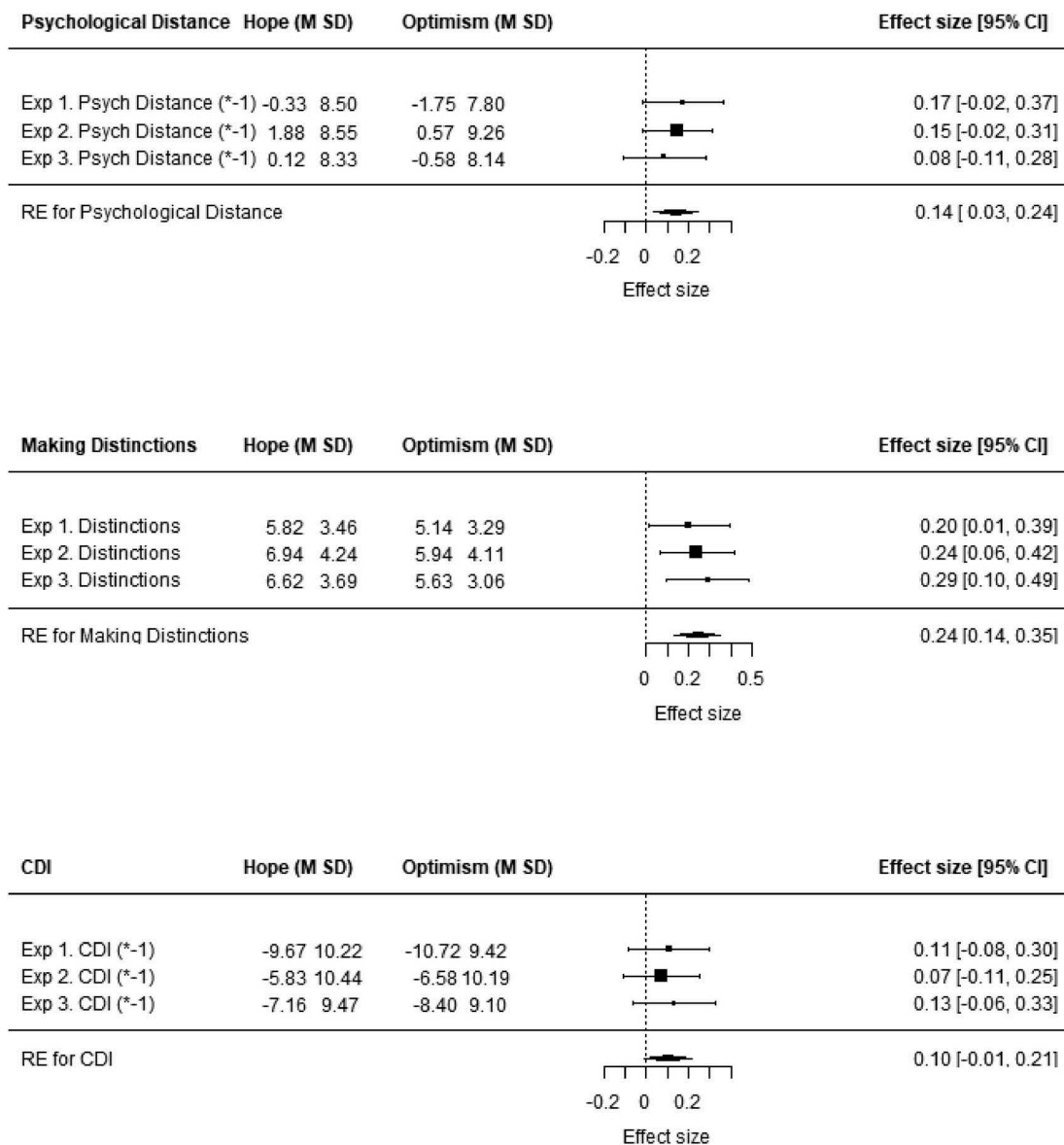


Figure 8. Forest plots of LIWC data for concrete language. Psychological distance and CDI are multiplied by -1 in order to reverse them, so that higher numbers reflect more concrete language.

of self-reported morality only contained two items and thus did not possess the best reliability. Including a better measure of morality, with more items, might detect differences. Thus, it is possible that hope is more moral than optimism, but based on these data, we could not reject the null hypothesis.

The data also produced mixed results for the effortful action hypothesis. The self-report, but not the LIWC, data supported it. The LIWC results could indicate a true null or perhaps some inefficiency with our LIWC coding scheme. Indeed, when we read respondents' events, the events in the hope condition often seemed to involve actions that one planned to do (e.g. getting married); whereas the optimism events often involved

actions that one did (e.g. optimistic about a recently turned in, but not yet graded paper) or was currently doing (e.g. in a good relationship). As a result, both groups might have used effort-related words, but the hope condition might express higher self-reports of effort because they have yet to engage in some of the effortful actions. Based on these data, we conclude that people view events as requiring more effortful action if they concern hope than optimism, but this difference is not evident in their use of language.

Consistent with action identification theory, respondents used more concrete language when they wrote about hope than optimism. This use of concrete language might help foster goal pursuit by reducing the

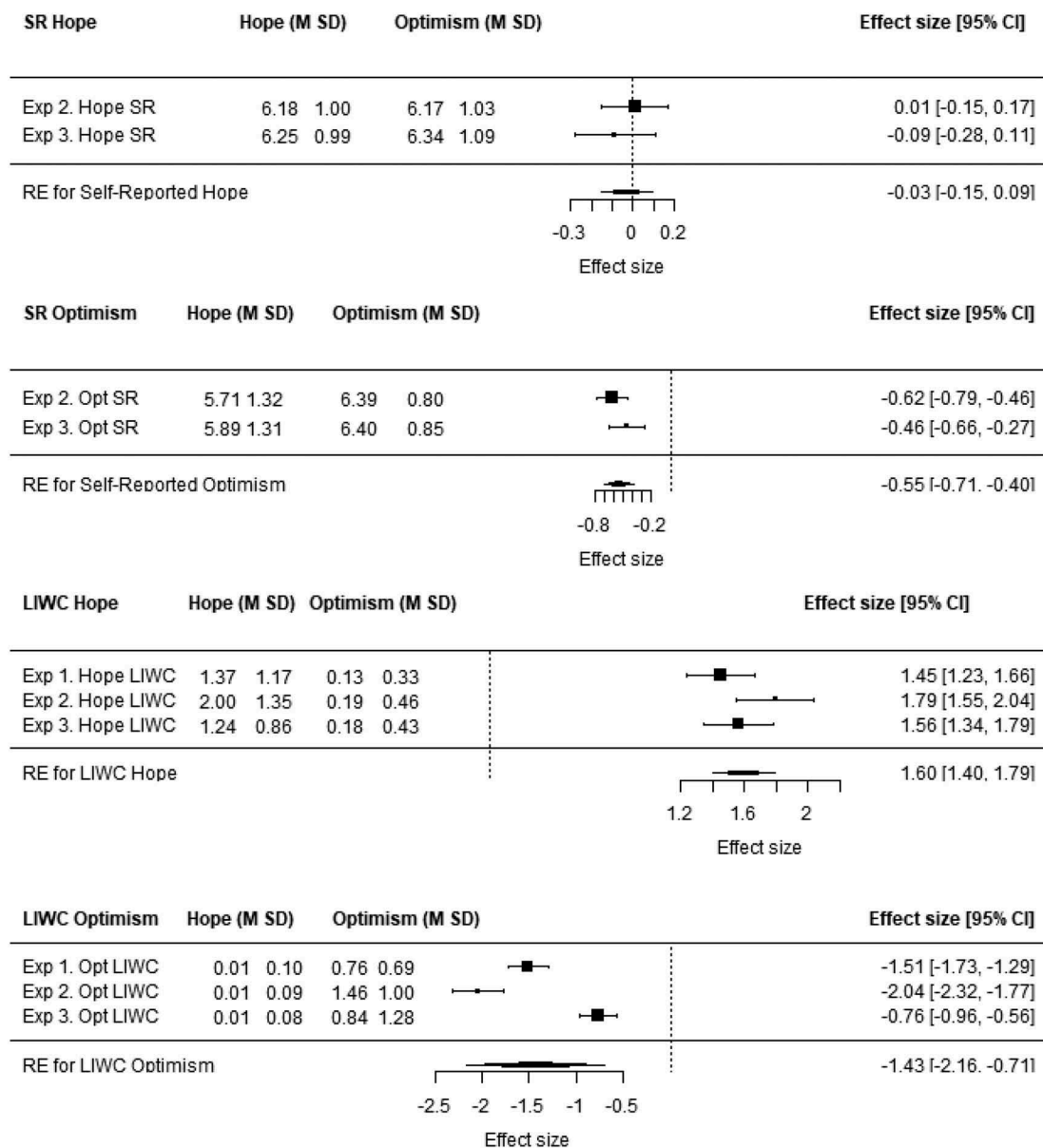


Figure 9. Forest plots of self-report (SR) and LIWC data for feelings of hope and optimism.

psychological distance between one's self and one's goal (Trope, Liberman, & Wakslak, 2007). When goals feel psychologically closer, people are more motivated and work harder toward them (Bashir, Wilson, Lockwood, Chasteen, & Alisat, 2014; Peetz, Wilson, & Strahan, 2009) and are more likely to achieve them (Peetz et al., 2009).

One interesting aspect of these data was that even though hope and optimism reflected different appraisals, respondents reported feeling similar amounts of hope, but less optimism, in the hope condition than in the optimism condition. We interpret this finding as reflecting the fact that people would say, 'I feel hopeful, but not optimistic,' but would probably not say, 'I

feel optimistic, but not hopeful.' This difference suggests that a good avenue for future work is to examine the independent psychological benefits of hope and optimism. For instance, if people are feeling optimistic, what are the benefits of the felt optimism and what are the benefits of the felt hope? It also explains why people might use the terms interchangeably in some situations but not others: optimistic events also can be hopeful, but hopeful events are less likely to be optimistic.

This project also provides initial evidence that LIWC is potentially another promising way to code emotional appraisal dimensions. LIWC is useful and expedient because it uses common, objective criteria that

Table 1. Meta-analysis on self-report and LIWC data (Random effects model).

	<i>Q</i>	<i>I</i> ²	<i>d</i>	<i>zval</i>	<i>p</i>	95% CI for <i>d</i>	
Uncertainty							
Uncertainty SR	3.61	44.93%	0.39	5.21	<.0001	0.24	0.53
Uncertainty LIWC	0.16	0.00%	0.29	5.27	<.0001	0.18	0.40
Importance							
Importance SR	3.17	37.00%	0.23	3.29	.001	0.09	0.36
Importance LIWC	1.01	0.00%	0.16	2.90	.004	0.05	0.27
Effort							
Effort SR	7.71*	73.48%	0.28	2.58	.010	0.07	0.49
Effort LIWC	13.45**	84.70%	0.02	0.12	.904	-0.26	0.29
Morality							
Morality SR	6.57*	71.70%	0.11	1.14	.255	-0.08	0.30
Morality LIWC	2.06	0.68%	0.06	1.12	.265	-0.05	0.17
Pleasantness							
Pleasantness SR	4.26	53.00%	-0.24	-2.94	.003	-0.41	-0.08
Pleasantness LIWC	2.23	12.72%	-0.19	-3.20	.001	-0.31	-0.07
Fear							
Fear SR	7.19*	71.7%	0.31	3.06	.002	0.11	0.50
Fear LIWC	0.11	0.00%	0.20	3.77	.0002	0.10	0.31
Temporal Distance	0.29	0.00%	0.25	5.04	<.0001	0.16	0.35
Concrete Language							
Psych. Dist.	0.43	0.00%	0.14	2.54	.011	0.03	0.24
Distinctions	0.43	0.00%	0.24	4.41	<.0001	0.14	0.35
CDI	0.20	0.00%	0.10	1.84	.064	0.01	0.21
Feelings of Hope and Optimism							
Hope SR	0.55	0.00%	-0.03	-0.47	.639	-0.15	0.09
Optimism SR	1.49	32.74%	-0.55	-6.92	<.0001	-0.71	-0.40
Hope LIWC	4.49	55.70%	1.60	15.96	<.0001	1.40	1.79
Optimism LIWC	44.24***	95.72%	-1.48	-4.52	<.0001	-2.12	-0.84

For each grouping, the first row indicates the overall effect size and the following rows indicate the sub-group analyses, in which SR = self-report data, LIWC = Linguistic Inquiry and Word Count, Psych. Dist. = psychological distance, and NA = Not Applicable. For the *Q* statistic: * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$. Positive effect sizes indicate hope possessed the attribute at higher levels than optimism. Bold *d* values indicate effect sizes that are significantly different from zero.

researchers can share. It also allows researchers to code quickly large amounts of text. Manual coding requires training researchers, more time to code each event, and the potential for variations amongst the coders. A downside is that LIWC does not consider context, which might contribute to the LIWC analyses generally producing smaller effect sizes than the self-reported appraisals. Nevertheless, given that hope and optimism are often used interchangeably by researchers, it is very promising that LIWC captured subtle differences in language use in this experimental context.

In addition to the limitations we have already discussed (e.g. the potential floor effect for morality, the inability of LIWC to take context into account), some other limitations should be noted. We purposefully did not define hope and optimism. A definition, however, might have resulted in stronger effects and increased precision. The effects also might be larger if participants were to think of an event that they were *most* hopeful or optimistic about happening in the future. Because these studies used mostly white college student samples, the findings might differ in other populations and should be generalized cautiously.

It is also important to remember that this work focuses on affective reactions and does not address how differences in hopeful or optimistic ways of thinking might function.

In sum, these data shed new light on the psychological appraisals that underlie hope and optimism. The data indicate that despite the fact that both hope and optimism reflect a desire for a positive future outcome, they differ from one another in terms of their appraisals. Hope and optimism are not the same state, and researchers should be wary of using these terms interchangeably. Hope involves events that are less pleasant, more fearful, and more uncertain than optimism, reflecting the fact that hope often involves more aversive situations. Yet, hope might help people navigate uncertain futures by promoting importance, effortful action, and concrete thinking.

Notes

1. Some researchers might question whether optimism is an affective state, because it sometimes is defined as an expectation. This expectation, however, typically involves an affective reaction (Bruininks & Malle,

2005). Indeed, Clore et al. (1987) classified optimism as an affective condition, because one can both *feel* optimistic and *be* optimistic. Shaver et al. (1987) even defined optimism as an emotion, signaling that ‘...one expects a joy-producing outcome in the future’ (p. 1069). Thus, optimism can be an affective state.

2. Base rate data were calculated by averaging across six feelings (hope, optimism, want, desire, wish, and joy) the number of participants (out of 52) that mentioned taking action.
3. Experiment 1 also measured appraisals of control and appropriateness, but these measures were problematic (see supplemental materials).
4. In Experiment 3, we added ‘To what extent do you feel that it is morally right to be hopeful/optimistic that this event will happen?’ which resulted in a poor alpha, $\alpha = .43$. We dropped this item resulting in a more reliable measure that directly replicates Experiment 1.
5. We also tested whether recalling a hopeful or optimistic event might produce incidental effects on downstream measures of abstract thought; specifically, using abstract descriptions to describe others’ actions, estimating how quickly time passes, and categorization of unusual exemplars. Because these variables focus on the downstream consequences of hope and optimism and are not relevant to appraisal processes, we discuss them in the supplemental materials.
6. In Experiment 2, we examined whether story order, if the story was recalled first or last, altered the results. Order did alter the data, but these order effects did not depend on whether the event involved hope or optimism. Thus, we collapsed across order to simplify the data and describe the order effects in the supplemental material.
7. Because temporal distance was an ordinal scale, we also conducted analyses treating it as such to confirm that the data produced similar values as the t-tests. As predicted, hopeful events took place further in the future than optimistic events. An ordinal logistic regression revealed that the odds of choosing a longer time period were higher in the hope condition versus the optimism condition, Experiment 1: $Exp(B) = 1.52$, 95% CI [1.09 to 2.12], a significant effect, $Wald \chi^2(1) = 5.97$, $p = .015$, Experiment 3: $Exp(B) = .71$, 95% CI [.51 to 1.00], a significant effect, $Wald \chi^2(1) = 3.84$, $p = .05$; Experiment 2: Wilcoxon Signed-Rank Test indicated hopeful events (Median = 7) would take longer to resolve than optimistic events (Median = 6), $Z = -3.56$, $p < .01$. Thus, even when the ordinal nature of this measure is taken into account, hopeful events are estimated to take place further in the future than optimistic events.
8. The data were skewed, with many people reporting high amounts of both these emotions. Given this skew, we also conducted nonparametric analyses on these data, which revealed the same pattern of results as the t-tests.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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