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Causal attributions of happiness and critical events: How beliefs about people's happiness are affected by moments of crisis and joy

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Abstract

This study extends the literature on people's understanding of happiness by asking whether positive and negative events could affect the causal attributions of what makes others happy. Using a factorial survey applied to a representative and probabilistic sample of Chileans, we examined three central causal attributions deeply rooted in Latin American folk culture. The results show that the positive family causal attribution of others' happiness is reinforced by both negative and positive events that happened to the observer. Moreover, the attributions of health and income are unchanged. Finally, we discussed how this study contributes to understanding people's causal attributions of others' happiness by examining how they are modified by positive and negative events that affect the observer.

Keywords

Causal attribution, positive events, negative events, factorial survey, Chile.

1. Introduction

A growing body of literature on cross-cultural psychology has examined how folk conceptions of happiness and its causal attributions vary across nations (Delle Fave et al., 2016; Oishi et al., 2013; Crossley & Langdrige, 2005; Imada, 2012). These discussions have been motivated by the idea that individuals' understanding of happiness is a central mechanism in how they will behave to achieve such happiness and by the effect on well-being (Joshani, 2019; Lambert et al., 2021; Titova & Sheldon, 2019). However, recent studies have indicated that popular conceptions of happiness not only vary by country, but also between individuals (Olivos, 2020; Moyano-Díaz et al., 2021). Social theories argue that shared beliefs at the macro-level are internalized and adopted by individuals in interaction with their experience (Sewell, 2005). Thus, events that affect individuals have the potential to generate nuances in beliefs that are often assumed to be homogeneous within societies. Therefore, this study extends the literature on people's understanding of happiness by asking whether positive and negative events could affect the causal attributions of what makes others happy.

The relationship between beliefs systems and individual experience has been largely theorized by social psychologists and sociologists. They argue that self-consciousness emerges from looking at and thinking about oneself as a subject among other subjects (Giddens, 1991). It is generated by an individual identity need of the self as a reflective project, where the evaluations of others are fundamentally powerful in modifying self-conceptions. According to Tajfel (1984), this influence depends on observable factors of an individual but is validated considering the evaluator's own characteristics and experience. This is particularly important for traumatic experiences (e.g., death of a family member, natural disaster), which affect individuals' belief systems, where views of the world and others are located (Amery, 1980; Frankl, 1959; Pérez-Sales et al., 2014). The impact of both traumatic and joyful events on one or several elements of the belief system could substantially modify an individual's life (Perez-Sales et al., 2012).

This study focuses on a Latin American country, namely, Chile. We use data from the 2015 *Barómetro de la Felicidad* (Happiness Barometer), a unique survey specialized on subjective wellbeing and representative (N=2267) of the Chilean population over the age of 18 living in urban areas (N=2267). To the best of our knowledge, this is the first survey specialized on subjective wellbeing representative of a developing country. The Chilean case combines conceptions suggested for both individualistic and collectivistic cultures.

This study contributes to the literature examining people's understanding of what makes others happy in three directions. First, hitherto, most studies have focused on single-country descriptions or cross-cultural variations of causal attributions of happiness (e.g., Diener et al., 2003; Pflug, 2009). We contribute to this literature by explaining within-country variations on how personal and family critical events could affect individuals' understanding of what makes others happy. Thus, we deepen the understanding of others' determinants of happiness by showing how they could vary according to observers' moments of crisis. Second, we use an experimental survey that enables us to untangle the effect of events and causal attributions of others' happiness. Eight potential determinants of happiness are experimentally manipulated, ruling out any confounding effect of individuals' characteristics such as the events themselves. This methodological innovation is a fundamental improvement on previous studies in causal attribution (for a detailed introduction, see Auspurg & Hintz, 2014). Third, we use a large and probabilistic sample of an entire country. Therefore, our conclusions could be generalized to the population and make it possible to leverage the realism of an out-the-lab experiment.

2. Causal attribution of happiness

Fritz Heider (1958) introduced attribution theory in psychology, and Weiner (1985, 2014) developed it to explain how people make sense of events and the behavior of others. The theory holds that people

make sense of situations in three dimensions: control (whether an event is controllable or uncontrollable), internal or external cause (that is, by itself, or externally caused, that is, by others or by situational factors), and temporary stability or instability. Moreover, people attribute causes to their own and others' emotions using lay theories (Hareli, 2014), making attribution theory a type of valuation theory (Weiner, 2014). Because people attribute causes to the emotions of others, the attribution theory extends the idea of valuation to the interpersonal domain (Van Doorn et al., 2015). The core of attribution analysis is the cause of an event or outcome, and the most basic assumption of an attribution view of emotion is that feelings are determined by thoughts, and specifically by beliefs about causality. These attributions can be considered a subset of the assessment approach to emotions, with these assessments focused on causal beliefs (Weiner, 2014).

The social implications of emotions are facilitated by attribution analysis, insofar as attribution theory deals with social perception and causal inferences about others (Weiner, 2014). Therefore, the understanding of emotional experience is broadened from the intra-psychic to the social and interpersonal realms. The ability to understand and assess the emotions of others is critical to being successful in social interactions and, for example, the socialization of empathy (e.g., Du et al., 2019). To do this, we often rely on direct or indirect sources of information to infer how others are feeling. For example, we can use direct individual visual information when it comes to face-to-face interactions, such as approximate age, gender, physical appearance, clothing, gestural-emotional expression, etc. to estimate the emotional state or happiness of others (Hall, 2001; Riggio & Riggio, 2012). However, we can also use external environmental or contextual cues to make inferences about the emotional state of others (e.g., Spunt & Adolphs, 2019). Likewise, our own emotions can help us make sense of situations. For example, the theory of valuation affirms that our emotions are accompanied by inferences about the situation or environment in which we find ourselves (van Doorn et al., 2015).

Similarly, research on social cognition has shown that one's own affective state is also used to guide judgments about others' emotional experiences (Silani et al., 2013; Steinbeis & Singer, 2014). That is, people tend to project their own emotions when inferring what other people feel, a process known as emotional egocentricity. The observation of egocentric biases extends previous literature on emotional egocentricity by showing that self-projection also occurs during perception-based emotion attribution. A tendency to project one's own emotions onto others is typically indicated by emotion judgments that are biased towards the participants' own affective states, particularly in incongruent conditions (Trilla et al., 2021). These authors suggest that future studies should assess to what extent individuals attribute their own affective states when making emotion judgments in more naturalistic

situations where they have access to additional contextual information and more time to correct for egocentric projections.

Therefore, this argument suggests the following hypotheses related to subjective well-being and critical events:

Hypothesis 1A: The greater the subjective well-being, the more positive is the evaluation of others' happiness.

Hypothesis 1B: The greater the occurrence of positive events, the more positive is the evaluation of others' happiness.

Hypothesis 1C: The greater the occurrence of negative events, the more negative is the evaluation of others' happiness.

When Chileans are asked where their own happiness comes from and that of others, they attribute the greatest importance to health and income (Olivos, 2020). Other studies using subsamples of the population suggest that Chileans also emphasize family, followed by work, friends, and finally leisure (Moyano-Díaz & Ramos-Alvarado, 2007; Moyano-Díaz et al., 2021). Moreover, Chilean adults from lower-status sectors highlight that, in addition to family, individuals' well-being is highly influenced by economic factors (Hernández et al., 2017). Thus, these studies indicate important variations in folk conceptions of happiness within the country.

Moreover, family well-being refers not only to having a family but specially to maintaining good relationships among its members. Happiness presents a strong component of "being with others," of which the members of one's own family occupy a privileged place (Schnettler et al., 2015). Studies in social comparison show that the relative happiness level in the social networks of close others significantly affects individuals' happiness level (Olivos et al., 2021), which also suggests the importance of significant others in Chileans' happiness. Therefore, this study closely examines income, health, and relation with others (i.e., partner status and family relationship) as causal attributions of happiness. All of them are suggested by happiness studies as crucial predictors of happiness (e.g., Deaton, 2008; Helliwell et al., 2012; Warr, 2019), and the latter as a distinctive feature of the context of the study. However, it is not clear where these beliefs come from and how they could be affected by individuals' experiences.

In the application of attribution theory to the study of well-being (Titova & Sheldon, 2019; Dubé et al., 1998; Joshanloo, 2007), studies across culture and age groups have shown that individuals tend to attribute positive events to stable, internal, and global causes. In contrast, negative events are attributed to unstable, external, and local factors. Thus, one of the implications of these attributions is the pride that individuals experience if happiness has an internal origin (Weiner, 2014). However, other studies point out that individuals also tend to attribute happiness out of individual control. For instance, using data from Germany and South Africa, Pflug (2009) presented evidence that individuals attribute happiness to good luck or fortune. The importance of external factors has also been supported for collectivistic cultures (e.g., Khanna & Khanna, 1979). Therefore, the complexity of attributions of happiness should be addressed in the case of Chile.

In Latin American popular culture, the chorus of an old Spanish song shows a widely shared belief of what signals success in life: health, money and love (“And whoever has these three things, give thanks to God”). An idea such as this is supported by the relative income hypothesis (Helliwell et al., 2012; Ifcher et al., 2018). Even though this order of priority is a research question of its own and can be answered by our empirical strategy, happiness-income studies have consistently shown they are crucial happiness determinants (Aknin et al., 2009; Böckerman et al., 2014; Kohler et al., 2005; Thaler & Sunstein, 2008). Empirical evidence in the case of Latin America and Chile has also shown similar findings (e.g., Moyano-Díaz, 2016; Hernández et al., 2017; Moyano-Díaz & Ramos, 2007). Since this belief is deeply rooted in Latin American folk culture, when anyone in the region see someone that has money, health and love, they will likely attribute a higher level of happiness than to those individuals without these three things. Therefore, each of these beliefs is a causal attribution of happiness.

Furthermore, we examine the magnitude of the causal attributions. A similar analysis was conducted by one of the authors elsewhere (Olivos, 2020) but without theoretical emphasis on particular attributes. Thus, replicating previous findings, we can assess whether the folk conception of “health, money, and love” is also sustained in its order of magnitude:

Hypothesis 2: Health, income, and partner status are positive causal attributions of happiness.

3. Critical events and causal attributions

As mentioned, extreme situations affect individuals' belief systems (Amery, 1980; Frankl, 1959; Pérez-Sales et al., 2014). For example, traumatic interpersonal experiences have a vital impact on survivors (Perez Sales et al., 2021). Experiences of interpersonal violence affect worldviews because they confront experience and people's worldviews (Breslau et al., 2004; Chapman et al., 2012). Hence, positive or negative events provide information about the world, which triggers adjustments on how individuals understand the world and others. These events connect with experiences of intimacy, confidence, and care (Botsford et al., 2019), security sensation (Barazzone et al., 2018), predictability and control over the own life (Frazier, 2003), among others. Regarding folk theories of happiness, certain relevant or critical events may affect beliefs of what makes others happy.

Since events can affect the way in which individuals see the world, critical events –positive or negative– may affect their attributions towards others. Thus, the occurrence of certain events is projected onto their judgments about the emotional state of others because their emotional state is also used to guide judgments about others' emotional experiences (Silani et al., 2013; Steinbeis & Singer, 2014). A theoretical implication of this argument is that events experienced by the attributory could also potentially affect beliefs about happiness determinants.

In what direction do critical events affect causal attributions? As explained by previous empirical studies in attributional theory (Titova & Sheldon, 2019), negative events and unhappiness tend to be explained by external factors. While positive events and emotions are attributed to internal factors. Thus, in response to negative events, individuals will ascribe to factors beyond the actor (external locus), while they will ascribe to factors about the actor (internal locus) when positive situations are encountered. Thus, causal attributions play the role of psychological palliatives and enable individuals to restore sense of control (Bukowski, de Lemus, Rodriguez-Bailón, & Willis, 2017; Hutri, 1995).

Therefore, if we consider that the attributory's emotional states are used to guide evaluations of others' emotional states, we can expect that attributions of "health, money, and love" will be affected differently by positive and negative events. Since income and health are factors about the observer, they may be strengthened with the occurrence of positive events because they enhance internal locus. The opposite may happen with negative events due to the enhancement of external locus. In contrast, love is not solely about the observer, but it is interpersonal and, thus, more external. Therefore, positive and negative events may affect this attribution differently. Hence, this reasoning derives the

following formal hypotheses about the implications of positive and negative events for causal attributions of happiness:

Hypothesis 3A: Positive events will strengthen income and health causal attributions and weaken love causal attribution.

Hypothesis 3B: Negative events will weaken income and health causal attributions and strengthen love causal attribution.

Overall, our theoretical argument entails that critical events experienced by the observer could potentially modify causal attributions of others' happiness.

4. Method

This study focuses on understanding how positive and negative events affect causal attributions of what makes others happy. For this, we utilize a factorial experiment, the detailed design of which has been published elsewhere,¹ aimed at describing the causal attributions of happiness of the Chilean population. This study substantially expands previous analyses of these data and incorporates the heterogeneity of average treatments effect by participants' positive and negative events. In section 3.2., we describe the main characteristics of the experimental design for assessing causal attributions of happiness.

4.1. Participants

We use a factorial survey experiment applied to a large, representative, and probabilistic sample (N=2267) of Chileans over the age of 18 living in urban areas.² This survey experiment is part of the 2015 *Barómetro de la Felicidad* (Happiness Barometer), a unique specialized survey about subjective well-being that enables us to generalize results to the entire Chilean population.

First, the country was proportionally stratified into geographical regions (north, center, south, and Metropolitan Region) and, second, into four successive probabilistic stages, namely, selection of cities, census unit, household, and subjects over the age of 18 who live in that household (at least in the last 6 months). Interviewees were surveyed face-to-face using a multistage sampling strategy. We further restricted our sample to cases with answer for all the variables into analyses at the participant level for the analysis. Due to the small fraction of cases with missing data (4.3%), we assumed these to be random and used listwise deletion. The final analytic sample comprised 2,169 participants.

¹ The reference has been omitted for anonymity during the peer-reviewed process.

² 86.6% of the Chilean population lives in urban areas (*Instituto Nacional de Estadísticas*, INE, 2018).

4.2. Instruments

Measurements of happiness causal attributions.

In factorial survey experiment, each individual rated the perceived level of happiness of 12 fictitious subjects described by eight dimensions (gender, age, partner status, family relationships, income, health, lifestyle, and intergenerational social mobility). This methodology enabled us to access subjective causal attributions and mitigate the social desirability limitations found in previous studies (Horiuchi et al., 2021). The factorial experiment was combined with traditional survey questions where individuals declared whether they or a family member experienced any situation from a list of 17 positive and negative events (e.g., the birth of a son, wage increase, severe sickness, death of a relative) over the last six months.

Factorial Surveys (FSs) are used to open the black box of people's judgments (Auspurg & Hintz, 2014; Wallander, 2009) and is a useful alternative to avoid the biases involved in the study of the attribution of happiness to others (Klar & Giladi, 1999). A series of fictitious vignettes describing a certain unit (e.g., persons, organization, situations) are rated based on a common rating task. The vignettes are the orthogonal combination of different dimensions that could take different values. In this experiment, vignettes describe hypothetical others using 8 dimensions following the literature in folk theories of happiness and preliminary qualitative evidence (Delle Fave et al., 2016; Dirección de Estudios Sociales, 2015). Table 1 shows the dimensions with the possible values they could take.

[Table 1 about here]

The vignettes' sampling could be divided into three stages. First, the full cross-combination of dimensions leads to a total of 253,000 potential fictitious vignettes: 2 (sex) * 6 (age) * 5 (partner status) * 4 (family relationships) * 8 (income) * 4 (health status) * 5 (intergenerational mobility). Second, from this universe, a sample is drawn to be rated by the participants. A D-efficient algorithm (Dülmer, 2007) suggests a sample of 120 vignettes. This is the smallest sample that maximizes orthogonality of the dimensions. Third, vignettes are divided into 10 blocks of 12 vignettes that will be randomly assigned to each participant. Considering the sample size, the total number of vignettes experimentally generated could be estimated: 2267 (participants) * 12 (vignettes) = 27,204. Due to the analytical sample restrictions and non-rated vignettes, the total number of vignettes used in the

analysis is 25,963. A sample of a vignette is shown in Figure 1. After each vignette, participants were asked to rate the happiness level of the fictitious other on a 10-category scale.³

[Figure 1 about here]

Individual-level measurements.

Participants were asked whether they or somebody in their family had experienced certain events in the last 6 months. The list includes 17 critical events such as divorce, job loss, death of a relative, job promotion, or graduation. The detail of the events is reported in Table S1 of the supplementary material. Then, we reduced dimensionality by grouping and summing variables in indexes of negative and positive events that combine different life domains (i.e., financial situation, education, family, health, natural disasters). In addition, given these critical events are rare, they are right-skewed. Hence, a logarithmic transformation was applied.

We considered the gender, age, city, educational level, and socioeconomic status of the participant based on income and occupation as control variables. The educational level of the head of the household was also considered, given that events could also involve the family. Moreover, the subjective well-being of the participant could potentially affect the results in two ways. First, it could affect the rating independently of the vignette's content and the occurrence of events. Second, events could affect the rating task through subjective well-being. Therefore, all the models are controlled for the averaged Satisfaction with Life Scale (SWLS) (Diener et al., 1985) and a 4-categories declaring the happiness level. Thus, the effect of the events can be interpreted as the net of participants' subjective well-being. In addition, we test the sensitivity of our results by the SWLS by a 10-categories indicator of life satisfaction. For this, respondents were asked "all things considered, how satisfied are you with your life in this moment?".

4.3. Analytical Strategy

Since vignettes are nested within participants, we used hierarchical linear models as the primary analytical strategy, as follows:

$$\beta_{0c} = \gamma_{00} + \gamma_{01} \ln(Positive)_c + \gamma_{01} \ln(Negative)_c + \gamma_{01} SWB'_c + \mu_{0c} \quad (2.1)$$

and

³ In Spanish, "to be" has two forms. First, it can refer to a permanent state or characteristic ("ser"). Second, it can be used to indicate a non-permanent state ("estar"). In the case of this survey, happiness is asked about as a permanent state.

$$\beta_{1c} = \gamma_{10} + \gamma_{11} \ln(\text{Positive})_c + \gamma_{11} \ln(\text{Negative})_c + \gamma_{11} \text{SWB}'_c + \mu_{1c} \quad (2.2)$$

where each participant-level intercept (β_{0c}) in equation (2.1) is a function of a general intercept represented by γ_{00} , the logarithm of positive events ($\gamma_{01} \text{Positive}$), the logarithm of negative events ($\gamma_{01} \text{Negative}$), and a vector $\gamma \text{SWB}'$ of the subjective well-being attributed indicators as controls. The second equation (2.2) states that the relationship between the rating tasks (Y) and the vignettes' dimensions (D'), represented by the slope coefficient β_{1c} , depends upon the logarithm of positive and negative events. The terms μ_{0c} and μ_{1c} are residual error terms at the participant level.

Moreover, the research design provides unconfounded estimations of the effect of the vignettes' dimensions on rating tasks. However, as mentioned, the events are not experimentally manipulated. Therefore, we approximate the analysis of events to an experiment using entropy balancing (Hainmueller, 2012), which is a matching technique that estimates scalar weights for the treatment group. One of the central innovations of this study is that it is one of the first applications of entropy balancing for continuous treatments in social sciences (Tübbicke, 2020). It calculates balanced covariates directly through the exact match of pre-specified means and variances of the covariates' distribution of the treatment and control group (Hainmueller, 2012; Stahl & Schober, 2020). We use participants' age, gender, educational level, and socioeconomic status, as well as the head of the household's educational level. Commonly used matching or propensity score adjustments often result in low levels of covariate balance in practice and, in some cases, even counteract bias reduction (Hainmueller, 2012; Iacus et al., 2012). In contrast, entropy balancing makes the occurrence of the events orthogonal to these predefined covariates, does not rely on a propensity score, and uses the whole sample to estimate effects. During the preprocessing stage, the covariate balance is directly built into the weight function used to adjust the control units. All the calculations were performed using Stata 16.

5. Results

5.1. Descriptive statistics

Table 2 describes the analytical sample. Half of the sample are females (0.5), and the average age is 44 years. One of every two participants has an intermediate educational level, which is consistent with the educational level of the household. Two-fifths of the participants are of low socioeconomic status (0.2) and one-third of middle-low socioeconomic status (0.3). As expected, the largest proportion of participants reside in metropolitan regions of the country. On average, participants' subjective well-being scored 4.8 points on the SWLS and 2 on the declared level of happiness in ranges from 1 to 7 and 1 to 4, respectively. In addition, participants scored 0.3 in the positive events

index and 0.4 in the negative events index using logarithmic transformations, which removes the skewness of rare events and approximates the variables to a more normal distribution. Both variables also show substantial standard deviations that suggest variability in the sample regarding the occurrence of these events.

[Table 2 about here]

5.2. Causal attributions

The causal attributions of happiness are reported in Table 3. The random-effects models are estimated. Model 1 shows the effect of each dimension on the happiness rating task. Model 2 includes participants' fixed-effect in the regression. This is a substantial test of the exogeneity of the treatment of the vignettes. When including fixed effects, all the participant-level unobserved confounders are controlled for. The consistency of the indicators between both models indicates that the randomization leverages the exogeneity of the vignettes' dimensions to estimate unconfounded effects. The results based on Model 1 show that Chileans attribute higher levels of happiness to females ($B = 0.072, p < .001$) and older people ($B = 0.029, p < .001$). Moreover, participants believe that higher income ($B = 0.148, p < .001$) and better family relationships ($B = 0.137, p < .001$) make others happier. Participants also attribute a positive effect of health status ($B = 0.428, p < .001$) on people's happiness. Regarding intergenerational comparison, Chileans also consider those individuals described in the vignettes who are in a better situation than their parents are happier ($B = 0.086, p < .001$). The nominal indicators of partner status and lifestyle also exhibit significant effects on the rating task. Participants attribute a lower level of happiness to others who have suffered a recent breakup ($B = -0.098, p < .01$) in comparison to individuals in a 5-year relationship. However, they attribute a higher level of happiness to others who have been single ($B = 0.102, p < .01$) or with a partner for one year ($B = 0.096, p < .01$) than to those in a 5-year relationship. It is important to mention there is no difference between the happiness attributed to individuals that have been single for five years and to individuals in a 5-year relationship. Moreover, Chileans attribute a negative effect to a boring ($B = -0.467, p < .001$) or stressful ($B = -0.573, p < .001$) life in comparison to an exciting life. There is no significant statistical difference between a quiet and exciting life. Overall, these findings support the idea that health and income lead to happiness, as stated in Hypothesis 2. However, in the case of love, it is only supported for filial love (i.e., family relationships) and not for romantic relationships. The significance of lifestyle emerges as an additional attribution to take into consideration. In addition, previous findings published by one of the authors are successfully replicated. Slight variations of the coefficients and standard errors are explained by the use of a different analytical sample and the inclusion of fixed effects.

Model 3 incorporates specific participant-level variables instead of fixed effects. Although we rule out these variables as confounders when incorporating fixed effects, they could still inform on whether there are systematic differences in the evaluation of the vignettes these indicators might explain. Life satisfaction measured by the SWLS has a positive and significant effect on the rating task ($B = 0.043$, $p < .05$), which supports Hypothesis 1A. In other words, participants with a higher level of life satisfaction tend to evaluate the happiness of the fictitious others upward. Nevertheless, the declared happiness of the participants and the occurrence of negative or positive events in the last months do not affect the absolute evaluation of happiness level. Thus, Hypotheses 1B and 1C are not supported. The coefficients remain non-significant when SWLS and declared level of happiness are removed from the model. Therefore, this result is not explained by potential moderation of those variables.

As a sensitivity analysis, we estimated Model 3 replacing the SWLS with a 10-category indicator of overall satisfaction with life (not reported). The positive and significant effect of this alternative variable ($B = 0.034$, $p < .05$) demonstrates that results are consistent when using the more complex indicator of life satisfaction.

[Table 3 about here]

Table 4 shows the Shapley and Owen decomposition of the R^2 from a single-level linear model to compare the contribution of each dimension to the explanation of the rating task. The most significant variable of the model is health status. Health status corresponds to exactly half of the explained variance of the model, followed by income (21.8%). The group of binary indicators of the lifestyle variable is the third most important causal attribution of others' happiness (16%). Family relationships also stand out as a substantial attribution.

[Table 4 about here]

5.3. Effects of positive and negative critical events

The main aim of this study was to examine whether critical events might affect the attribution that individuals make about others' happiness. For this purpose, we estimate two models with cross-level interactions: (1) a model with simultaneous interactions between dimensions and the logarithmic index of positive events, and a (2) model with all the interactions between dimensions and the index of negative events. Each model includes the corresponding entropy balance weight, subjective well-being controls, and the main effects of both critical events. The full models can be found in the supplementary material.

Figure 2 shows how the effect of health, income and family on the attributed level of happiness change across different levels of the positive events index. The partner status dimension is not reported in the figure because its interactions are not statistically significant and its contribution to the explained variance is marginal. Graphs A and B exhibit a stable effect when the occurrence of positive events increases. Thus, the results suggest there is no significant variation of the income and health effects when interacted with the logarithmic scale of positive events. In other words, individuals do not modify their two main causal attributions of happiness when they experience positive events in recent months. They are substantially stable. In contrast, as shown in Graph C, the effect of others' family relationships on others' happiness attribution increases with the occurrence of positive events ($B = 0.056, p < .05$). Therefore, if the attributory experiences more positive events, they are more likely to attribute a stronger effect of family relationships on others' happiness, which contradicts Hypothesis 3A on love attribution weakening for the case of filial love. Hence, although the causal attribution of family relationships is not among the most influential attributions, its effect is conditional on the positive experiences of individuals.

[Figure 2 about here]

Regarding heterogeneity by negative events, the results exhibit a similar pattern to the occurrence of positive events (Figure 3). As suggested by Graph C, when participants have experienced certain negative critical events in the last months, they also attribute a stronger effect of family relationships on others' happiness ($B = 0.057, p < .05$). However, Graphs A and B suggest that the causal attributions of health and income do not vary significantly when the attributory experiences negative events, respectively. Hence, since the causal attribution of family is strengthened, Hypothesis 3B is partially supported.

[Figure 3 about here]

The causal attribution of lifestyles to others' happiness is also conditional on participants' positive events. As shown in Figure 4, when hypothetical others have a stressful life, participants attribute a lower level of happiness. This negative effect becomes stronger as the positive events indicator increases.

[Figure 4 about here]

6. Discussion and Conclusion

This study contributes to the emerging literature on causal attributions of happiness by showing how positive and negative critical events impact the understanding of others' happiness. Using a survey experiment with a probabilistic and representative sample of Chileans, we examined three central

causal attributions deeply rooted in Latin American folk culture and supported by the empirical evidence as factual predictors of happiness in the country and the region. The results of this study show that participants believe that “health, money, and love” are determinants of happiness when evaluating fictitious and generalized others, with a prominently important role for the weight of income and health, as the literature on the study of well-being has consistently emphasized (Deaton, 2008; Helliwell et al., 2012; Warr, 2019).

In the case of love, family relationships (i.e., filial love) show a more crucial attribution than partner status (i.e., romantic love). A possible explanation of the difference between family relationship and partner status dimensions is that the former refers to their quality, and could even include the relationship with partners if they are considered family members. In contrast, the partner relationship dimension is related to the status and length of the relationship and not the quality. Therefore, this finding could suggest that the quality of the relationship with others is a more salient causal attribution than the relation per se, which is consistent with the findings of Hernández-Aburto et al. (2017).

As we have highlighted, extreme experiences influence individuals’ perceptions of others (Amery, 1980; Botsford et al., 2019; Breslau et al., 2004; Chapman et al., 2012; Frankl, 1959; Pérez-Sales et al., 2014; Perez Sales et al., 2021). This study shows that the positive family causal attribution is reinforced by both negative and positive situations. The reinforcement of the positive attribution when positive events occur contradicts the idea that the external locus is weakened for the particular case of family relationships. The importance of interpersonal relations is strengthened when positive events occur. Similarly to East Asian cultures, personal success is not at the center of subjective well-being (Oishi, 2010, Uchida & Ogiwara, 2012). Thus, in more communitarian societies like Latin American countries, individuals might see positive events as beneficial for individuals and their families. Therefore, it illustrates the relevance of incorporating the family in the construction of life satisfaction. Hitherto, the focus only on personal satisfaction and gratification has led to a partial understanding of happiness on subjective well-being research (Olivos & Ernst, 2018).

Moreover, in contrast to family relationships, the attributions of the two most important predictors (health and income) are unchanged. Recent studies in cultural evolution discuss the persistence and change of elements of individuals’ belief systems (Kiley & Vaisey, 2020). In general, beliefs tend to be more consistent with stable disposition than with active updating models. Therefore, we show that, although the central causal attributions of happiness do not change significantly with the occurrence of events, a less strong causal attribution, but crucial in the Latin American context, is updated. This finding suggests that a moment of crisis could effectively modify causal attributions in belief systems, but only the less central ones, such as family relationships and lifestyle. Moreover, the change is

consistent for both positive and negative events, which contradicts the assumption that attributions to interpersonal relationships, as an external locus, will be strengthened when encountering misfortune (Bukowski et al., 2017; Hutri, 1995). The positive attribution of others' happiness to their family relationships is always strengthened, regardless of whether events are positive or negative. It is worth noting that these events are not only family-related but also consider job, health, natural disasters, among others.

This study contributes to understanding people's causal attributions of others' happiness by examining how they are modified by positive and negative events that affect the observer. Further studies might consider whether the updating of attributions to family relations is persistent across time. Despite the robust effect on this dimension and the retrospective event questions, our cross-sectional design does not enable us to answer whether the causal attribution stabilizes to the levels before the critical event. In addition, despite the generalizability of the results due to the large and probabilistic sample, as well as the realism of the experiment, researchers could examine how events affect causal attributions in other contexts where different determinants of well-being are emphasized. Finally, others' happiness is a particular outcome about which individuals make inferences. This study could be expanded to other outcomes, such as moods, material success in life and health status, among others.

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Table 1.-

Dimensions and levels

#	Dimensions	Levels
1	Gender	Female / Male
2	Age	20 / 30 / 40 / 50 / 60 / 70
3	Partner status	Without partner for 5 years / Without partner for 1 year / Recent break up / With partner for 1 year / With partner for 5 years
4	Family relationships	Very bad / Bad / Good / Very good
5	Income	\$210,000/\$400,000/ \$600,000/ \$800,000/\$1000,000/ \$2000,000/ \$3,000,000/\$5,000,000
6	Health	Very good / Good / Bad / Very bad
7	Lifestyle	Exciting / Quiet / Boring / Stressful
8	Intergenerational comparison	Much worse / Worse / Same / Better / Much better

Note: Income values expressed in Chilean pesos.

Table 2.-

Descriptive statistics of participants.

Variable	Mean	SD	Min	Max	N
Female	0.5	0.5	0	1	2169
Age	43.8	17.0	18	95	2169
Educational level (Participant)					
Low	0.2	0.4	0	1	2169
Middle	0.5	0.5	0	1	2169
High	0.3	0.5	0	1	2169
Educational level (Household head)					
Low	0.2	0.4	0	1	2169
Middle	0.5	0.5	0	1	2169
High	0.3	0.5	0	1	2169
Socioeconomic status					
Low	0.4	0.5	0	1	2169
Middle-low	0.3	0.5	0	1	2169
Middle-high	0.2	0.4	0	1	2169
High	0.1	0.2	0	1	2169
Geographic region					
North	0.1	0.3	0	1	2169
Center	0.2	0.4	0	1	2169
South	0.3	0.4	0	1	2169
Metropolitan region	0.4	0.5	0	1	2169
SWLS	4.8	1.2	1	7	2169
Happiness	2.0	0.8	1	4	2169
Log Positive events	0.3	0.6	0	2.4	2169
Log Negative events	0.4	0.5	0	2.4	2169

Note: Weighted statistics. Socioeconomic status is estimated using occupation and income of the household head. Low educational level = complete or incomplete primary education; Intermediate educational level = complete or incomplete secondary education; High educational level = Some tertiary education. The mean of dummy variables is equivalent to the proportion of 1.

Table 3.-

Multilevel models of vignette dimensions.

VARIABLES	Model 1 B	Model 2 B	Model 3 B
<i>Fixed part</i>			
Female	0.072*** (0.022)	0.073*** (0.021)	0.072*** (0.022)
Age	0.029*** (0.006)	0.029*** (0.006)	0.029*** (0.006)
Partner status (Ref. Cat.: With couple for 5 years)			
Without partner for 5 years	-0.069* (0.034)	-0.063 (0.033)	-0.069* (0.034)
Without partner for 1 year	0.102** (0.034)	0.106** (0.033)	0.102** (0.034)
Recent break up	-0.098** (0.034)	-0.095** (0.033)	-0.098** (0.034)
With partner for 1 year	0.096** (0.035)	0.098** (0.033)	0.096** (0.035)
Family relationships	0.148*** (0.010)	0.150*** (0.009)	0.148*** (0.010)
Income	0.137*** (0.005)	0.137*** (0.005)	0.137*** (0.005)
Health	0.428*** (0.010)	0.429*** (0.009)	0.428*** (0.010)
Lifestyle (Ref. Cat.: Exciting)			
Quiet	0.012 (0.031)	0.004 (0.029)	0.012 (0.031)
Boring	-0.467*** (0.031)	-0.475*** (0.030)	-0.468*** (0.031)
Stressful	-0.573*** (0.031)	-0.579*** (0.030)	-0.574*** (0.031)
Intergenerational comparison	0.086*** (0.008)	0.086*** (0.007)	0.086*** (0.008)
Positive Events Index			0.011 (0.042)
Negative Events Index			0.052 (0.046)
SWLS			0.043* (0.020)
Declared happiness			-0.002 (0.035)
Constant	5.131*** (0.065)	3.327*** (0.481)	2.759*** (0.158)
<i>Random part</i>			
σ^2 (Constant)	0.875 (0.034)	0.875 (0.034)	0.872 (0.034)
σ^2 (Residual)	2.988 (0.028)	2.988 (0.028)	2.988 (0.028)
Observations	25,771	25,771	25,771
Number of groups	2,164	2,164	2,164
Individual FE	NO	YES	NO

Note: Standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05.

Table 4.-

R-squared decomposition.

Variables	Individual %R2	Group %R2
Female	0.2	
Age	0.5	
Family relationships	6.1	
Income	21.8	
Health	50.0	
Intergenerational comparison	3.8	
<i>Partner status (Ref. Cat.: With couple for 5 years)</i>		
Without partner for 5 years	0.2	
Without partner for 1 year	0.3	1.7
Recent break up	0.5	
With partner for 1 year	0.6	
<i>Lifestyle (Ref. Cat.: Exciting)</i>		
Quiet	2.9	
Boring	4.8	16.0
Stressful	8.2	

Figure 1.-

Example of vignette

Daniela is 30 years old. She has been single for 5 years and has very good family relationships. She earns a monthly salary of \$3,000,000 Chilean pesos. Her health is very bad. She claims to have a stressful life and to be in a worse situation than her parents.

How happy do you think Daniella is?

Completely unhappy Completely happy

1	2	3	4	5	6	7	8	9	10
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Figure 2.-

Cross-level interactions between health, income and family dimensions and positive events.

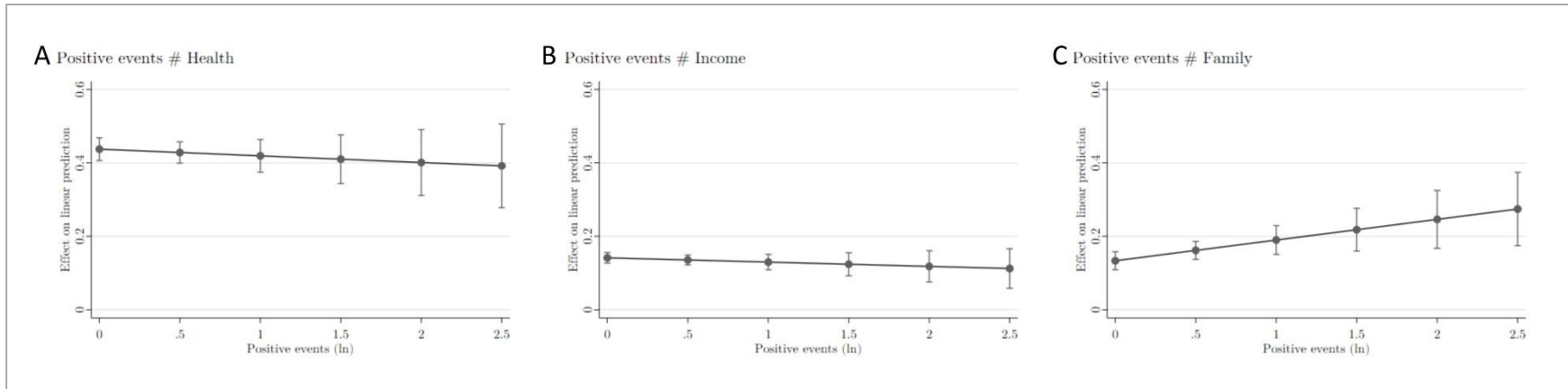


Figure 3.-

Cross-level interactions between health, income and family dimensions and negative events.

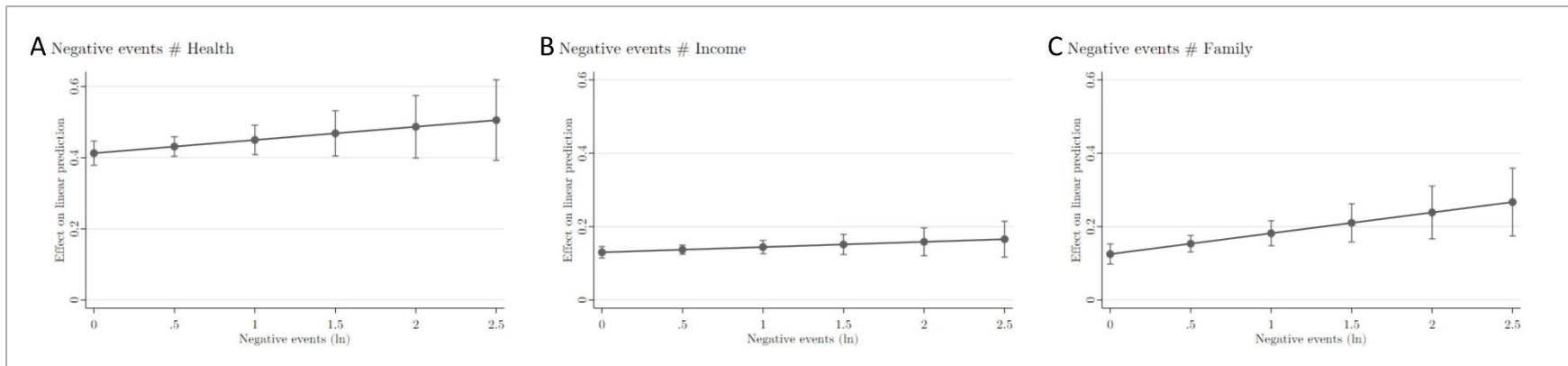


Figure 4.-

Interaction between stressed life of hypothetical others and participants' positive events.

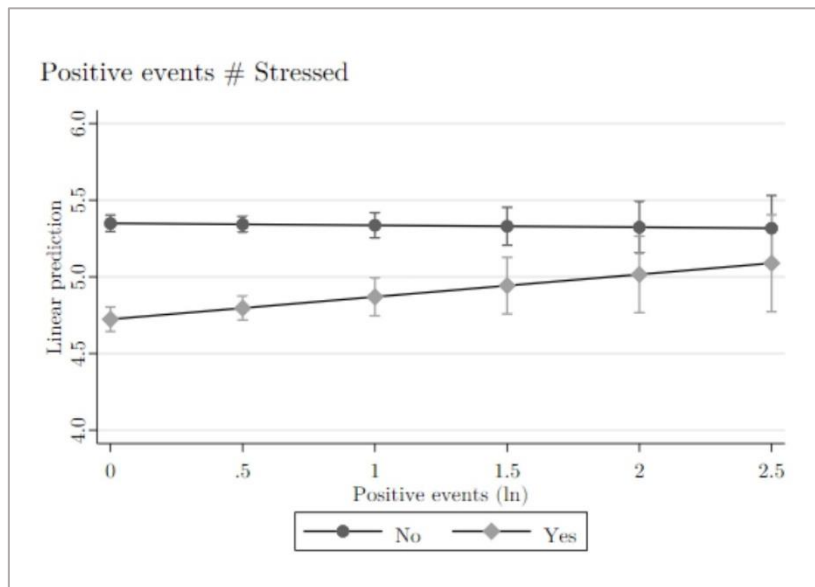


Table S1.
Events and classification.

Category	Event	Proportion
Positive events	Getting married, finding a partner or falling in love	0.08
	Attending a children or grandchildren's graduation	0.12
	Birth of a child	0.04
	Promotion or income increase	0.05
	Buying a house	0.03
Negative events	Severe illness of a love one or important person	0.15
	Ending of an important relationship (divorce or break up)	0.07
	Death of a love one or important person	0.08
	Decrease on income	0.15
	Cut off of basic services due to unpaid bills	0.08
	Employment loss of household head	0.07
	Damage because of an earthquake, fire or flood	0.03
	Drop out because of financial reasons	0.03
	Psychiatric illness (depression, bipolarity, eating disorder, etc.)	0.08
	Not having access to medical care or medicines	0.08
	Drug addiction or alcoholism	0.02

Table S2.
Cross-level interactions with positive events.

VARIABLES	(1) B
Female	0.052* (0.025)
Age	0.034*** (0.007)
Partner status (Ref. Cat.: With couple for 5 years)	
Without partner for 5 years	-0.083* (0.041)
Without partner for 1 year	0.110** (0.040)
Recent break up	-0.100* (0.041)
With partner for 1 year	0.074 (0.038)
Family relationships	0.133*** (0.013)
Income	0.141*** (0.007)
Health	0.437*** (0.016)
Lifestyle (Ref. Cat.: Exciting)	
Quiet	-0.020 (0.037)
Boring	- 0.491*** (0.040)
Stressful	- 0.625*** (0.038)
Intergenerational comparison	0.088*** (0.010)
Positive Events Index	-0.091 (0.156)
Negative Events Index	0.063 (0.049)
Female # Positive Events Index	0.049 (0.041)
Age # Positive Events Index	-0.012 (0.013)
Without partner for 5 years # Positive Events Index	0.030 (0.071)
Without partner for 1 year # Positive Events Index	-0.028 (0.062)
Recent break up # Positive Events Index	0.040 (0.062)
With partner for 1 year # Positive Events Index	0.088 (0.060)
Family relationships # Positive Events Index	0.056* (0.022)
Income # Positive Events Index	-0.012 (0.012)
Health # Positive Events Index	-0.018

Quiet # Positive Events Index	(0.026) 0.117 (0.060)
Boring # Positive Events Index	0.078 (0.068)
Stressful # Positive Events Index	0.159* (0.067)
Intergenerational comparison # Positive Events Index	-0.007 (0.019)
SWLS	0.009* (0.004)
Declared happiness (Ref. Cat.: Very happy)	
Quite happy	0.057 (0.057)
Not very happy	0.063 (0.081)
Not happy	-0.143 (0.145)
Constant	2.721*** (0.155)
Observations	25,771
Number of groups	2,164

Note: Robust standard errors in parentheses. Entropy balance included. *** p<0.001, ** p<0.01, * p<0.05.

Table S3.
Cross-level interactions with negative events.

VARIABLES	(1) B
Female	0.088** (0.028)
Age	0.032*** (0.008)
Partner status (Ref. Cat.: With couple for 5 years)	
Without partner for 5 years	-0.057 (0.046)
Without partner for 1 year	0.123** (0.044)
Recent break up	-0.082 (0.044)
With partner for 1 year	0.108** (0.041)
Family relationships	0.125*** (0.014)
Income	0.130*** (0.008)
Health	0.412*** (0.017)
Lifestyle (Ref. Cat.: Exciting)	
Quiet	0.008 (0.041)
Boring	-0.451*** (0.045)
Stressful	-0.594*** (0.042)
Intergenerational comparison	0.078*** (0.011)
Negative Events Index	0.009 (0.044)
Positive Events Index	-0.251 (0.151)
Female # Negative Events Index	-0.037 (0.044)
Age # Negative Events Index	-0.008 (0.013)
Without partner for 5 years # Negative Events Index	-0.050 (0.070)
Without partner for 1 year # Negative Events Index	-0.046 (0.064)
Recent break up # Negative Events Index	-0.034 (0.069)
With partner for 1 year # Negative Events Index	-0.035 (0.063)
Family relationships # Negative Events Index	0.057** (0.022)
Income # Negative Events Index	0.014 (0.012)
Health # Negative Events Index	0.037

Quiet # Negative Events Index	(0.027) 0.004 (0.061)
Boring # Negative Events Index	-0.018 (0.067)
Stressful # Negative Events Index	0.047 (0.065)
Intergenerational comparison # Negative Events Index	0.019 (0.017)
SWLS	0.010* (0.004)
Declared happiness (Ref. Cat.: Very happy)	
Quite happy	0.015 (0.056)
Not very happy	0.048 (0.080)
Not happy	-0.164 (0.146)
Constant	2.847*** (0.159)
Observations	25,771
Number of groups	2,164

Note: Robust standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05.