Original Article

Merry Christmas and a "Healthy" New Year

Assessing People's Expectations Regarding Christmas Gathering in Pandemic Times

Joachim Waterschoot[1], Sofie Morbée[1], Omer Van den Bergh[2], and Maarten Vansteenkiste[1]

[1]Faculty of Psychology, Department of Developmental, Personality, and Social Psychology, Ghent University, Belgium
[2]Department of Health Psychology, KU Leuven, Belgium

Abstract: *Background*: In November 2020, many European governments imposed severe limitations on social contacts and festive gatherings to avoid a further outbreak of the COVID-19 pandemic. *Aims*: At the moment when it was still unclear whether Christmas gatherings would be allowed, the present vignette study was conducted to evaluate four hypothetical scenarios varying in restrictiveness (i.e., 1, 2, 4, or an unlimited number of visitors). *Method*: In total, 5,756 Belgian participants (65.7% female; M_{age} = 45.6, range: 18–89) evaluated each scenario in terms of the perceived strictness, probability of adherence, and expected psychological advantages (i.e., autonomy, relatedness, pleasure) and disadvantages (i.e., concerns). *Results*: Evidence for a curvilinear pattern was found, such that the expected psychological benefits increased with an increasing number of allowed visitors till 4, with this effect being reversed in case of an unlimited gathering. Yet, these main effects were qualified: Older adults, those living together, and those scoring high on risk perception and autonomous motivation to adhere to the corona measures expected the more restrictive scenarios to be equally beneficial compared to the more relaxed scenarios. *Limitations*: Limitations are self-selection of the sample, no counterbalancing of the scenario's and the vignette-based methodology. *Conclusion*: The present findings suggest that people's risk perception and autonomous motivation are key to secure and stimulate the acceptance of life-restricting measures.

Keywords: COVID-19, Christmas, intimacy, self-determination theory, mental health

In November 2020, Belgium faced a new outbreak of COVID-19 infections forcing the national government to install a second lockdown. As many cultural, societal, and economic events were already canceled in 2020 due to the pandemic, the new outbreak constituted a serious threat to people's need to bond in the upcoming Christmas holidays. At that time, discussions among politicians, policymakers, and the broader public got heated to prohibit social gatherings or instead allow some social contact. More specifically, the government faced the challenge of, on the one hand, considering people's psychological well-being and allowing social gatherings during the Christmas celebrations – with only a few weeks ahead – and, on the other hand, limiting the health risks and minimizing the virus spreading. As an opportunity to contribute to this societal debate and to support the government in making evidence-based decisions, the current study examined the expected psychological benefits and plausible health costs of different hypothetical scenarios varying in their restrictive nature of social contacts. Doing this in a large sample, we additionally sought to shed a nuanced light on this issue by taking different sociodemographic and psychological variables into account.

Christmas in Pandemic Times

Christmas holidays are pictured as a period of psychological enhancement, accompanied by elevated happiness, joy, and warm interactions with significant others. In contrast to its global popularity, only a limited number of empirical studies attempted to investigate its psychological effects, with a mixed pattern of findings being reported. On the one hand, traditional features like Christmas music (Spangenberg et al., 2005) and Christmas decorations at home (Werner et al., 1989) have been found to contribute to people's feelings of happiness, prosocial behavior, and positive memories. On the other hand, individuals experienced Christmas as a stressful period with increased chances of family conflicts, financial concerns, and alcohol abuse (Hairon, 2008; Kloner, 2004). For instance, a large-scale study by Mutz (2016) in 11 European countries showed that

Christmas was featured by a decrease in life satisfaction and emotional well-being compared to other periods in the year. Even increased levels of loneliness and more suicide attempts have been reported, particularly after the Christmas celebrations (e.g., Sansone & Sansone, 2011). In an attempt to gain insight into the heterogeneity of Christmas experiences, a few studies have shed light on the moderating role of religious and family values (e.g., Kasser & Sheldon, 2002). For instance, gifts were only perceived as meaningful when participants reported a strong social connection with others (e.g., Belk, 2001). In contrast, participants perceived the Christmas holidays as less joyful if they focused more on the monetary value and the number of received gifts (e.g., Burgoyne & Routh, 1991). Further, a study in Austria focused on moderating factors of psychological well-being during Christmas times during the COVID-19 pandemic, showing that particularly younger people and those being single/separated reported decreased mental health over time (Dale et al., 2021).

Although Christmas is not invariantly related to an increase in mental health, the threat of gathering all together in this period, given the new outbreak of COVID-19 infections in Belgium elicited intense reactions in the public opinion. From a virologic perspective, it was of utmost importance to maintain a strict set of measures to minimize the spreading of the virus. Yet, the psychological trade-off of this choice after 8 months of the corona crisis was deemed high as well. As a result, a highly debated discussion was held in society about the trade-off between the safety of minimized COVID-19 contamination and the added value to the mental well-being of celebrating Christmas in intimate circles.

One dynamic that influences the perception of risk for infection in these circumstances is what is known as the *intimacy paradox* (e.g., Novelli et al., 2010). Grounded in social psychological theories (e.g., the Social Identity Theory, Turner et al., 1987), this paradox holds that people's perception of safety with other people or in particular places depends on their intimacy with these people and places. Herein, we estimate risks as lower with increased perceptions of familiarity and ingroup membership (Reicher & Haslam, 2011). Across a set of experiments, Cruwys and colleagues (2020) demonstrated the effects of ingroup-membership, with participants perceiving to be less at health risk after shaking hands with someone from the same political party or sharing the same work environment with colleagues. Other research showed that the level of crowd density during the Hajj was related to higher safety and a tendency to take higher risks among those who strongly identify with the crowd (Alnabulsi & Drury, 2014). This is because people's perceived group membership has been thought of as a way to define their own identity, resulting in stronger perceptions of similarities and higher scores on psychological well-being when one feels included (Williams, 1997). Even in physical spaces, it has been shown that people who celebrate Christmas reported a stronger feeling of inclusion and a more positive mood when observing Christmas displays (Schmitt et al., 2010). In COVID-19 times, Christmas may elicit such an intimacy paradox. Given the already longstanding frustration of the need for relatedness (e.g., Vermote et al., 2021) and the impaired well-being (e.g., O'Connor et al., 2021) after eight months of the pandemic, meeting close others at home without social restrictions may enhance intimacy and may even be perceived as safe, leading one to underestimate the real risk associated with the situation at the time (Drury et al., 2021).

Understanding Diversity in Expectations

Yet, the question is whether all citizens are equally at risk for this paradox. Given the serious health risks associated with social gatherings, people's expectations for Christmas may well be determined by interindividual differences in risk perception and motivation to adhere to the measures. First, risk perception denotes people's feelings of being at risk of being contaminated and its severity, this in the perspective of both themselves as the total population (Wise et al., 2020). A recent study (Byrne et al., 2021) found that individual tendencies towards risky decision-making, temporal discounting (favoring small immediate over larger long-term outcomes), optimism bias (believing that negative events are more likely to happen to others than to oneself), and using affect as a heuristic for risk perception impacted compliance with corona-related behavioral safety measures. Differences in risk perception may therefore interact with the need for social connectedness and intimacy, and influence the preference and expected benefits of more restrictive or more relaxing scenarios.

Second, people are more likely to accept strict measures when they perceive them as legitimate, necessary, and meaningful, leading them to internalize the reasons underlying adherence (Vansteenkiste et al., 2018). According to Self-Determination Theory (SDT; Ryan & Deci, 2017), a comprehensive theoretical framework on psychological health and motivation, it is critical to consider individuals' type of motivation when predicting behavioral outcomes. When individuals identify with the importance of the measures, they volitionally or autonomously adhere to them. Previous studies have shown that the full endorsement of health measures predicts sustained adherence and transfer of measures to new contexts (e.g., Hagger & Chatzisarantis, 2016). Concerning COVID-19 measures, a series of cross-sectional, diary, and longitudinal studies found the autonomous motivation to predict long-term adherence to COVID-19 restrictions (Morbée, Vermote, et al. 2021).

Further, autonomously motivated professional cyclists were more likely to continue the use of adaptive self-motivating strategies in the first weeks of the corona crisis, a period in which all competitions and training sessions were canceled (Morbée, Haerens, et al., 2021). Together, these findings suggest that people high in autonomous motivation may hold different expectations regarding more restrictive Christmas scenarios.

Finally, next to risk perception and motivation (e.g., Guay et al., 2021), research also demonstrated the unique effects of sociodemographic variables such as age and civil status (e.g., Morbée, Vermote, et al., 2021). Older participants and those with a partner reported higher levels of autonomous motivation and adherence to the measures. Especially young adults and those having no partner or not being married reported more feelings of loneliness (Hoffart et al., 2020), less autonomy satisfaction (Vermote et al., 2021), and less social connectedness (Okabe-Miyamoto et al., 2021) during the pandemic. In light of these findings, we examined whether these sociodemographic variables would impact people's expectations for an appraisal of different scenarios varying in social restrictiveness during Christmas times.

The Present Study

At a moment that the 2020 Christmas celebrations were threatened by alarming COVID-19 evolutions in Belgium, the current study was set up to investigate how people would evaluate four different hypothetical Christmas scenarios that varied in restrictiveness. For each of the four scenarios, ranging from allowing only one single visitor to an unlimited number of visitors during Christmas celebrations, a similar set of study variables was assessed using a within-person design. Specifically, participants indicated how strict they rated each scenario, whether they expected to have their basic needs for relatedness and autonomy met, to have pleasure and fun during the Christmas celebration and whether they would adhere to the measures in case they were installed. The inclusion of a diversity of cognitive (i.e., strictness), affective (i.e., autonomy, relatedness, pleasure, concerns), and behavioral (i.e., probability of adherence) outcomes allowed us to shed a nuanced light on the between-scenario differences.

We had two main objectives, which were addressed through two hypotheses. First, we sought to examine the main effect of the restrictive versus relaxed nature of the manipulated scenarios (Objective 1), thereby generally expecting that both the expected psychological benefits (i.e., increased autonomy, relatedness, pleasure) and costs (i.e., concerns) would increase with increasing relaxation. Yet, because the incremental value in terms of supported relatedness, autonomy satisfaction, and pleasure from four to an unlimited number of visitors may be leveling off, we also tested the possibility of a curvilinear association. Similarly, the gradual increase in expected concerns to be infected may get "accelerated" in the transition from four to an unlimited number of visitors, equally leading to a curvilinear association. Overall then, we did not expect the scenario with an unlimited number of visitors to be most strongly adhered to; on the contrary. Given the varying pros and cons associated with the more strict scenarios, it was difficult to predict which scenario people would be most willing to adhere to.

Second, given the noticeable polarization in this societal debate, we sought to examine factors that may explain the heterogeneity in individuals' appraisal of the different situations (Objective 2). In doing so, we considered two sociodemographic characteristics (i.e., age, civil status) and two psychological dimensions (i.e., risk perception, autonomous motivation to adhere to the sanitary measures) as potential moderators. This selection was made because older individuals, those having a partner or being married, those who perceive greater risks, and those autonomously motivated to adhere to the measures have been found to adhere better to the measures and score higher on psychological well-being (e.g., Guay et al., 2021; Morbée, Vermote, et al., 2021). Therefore, they may rate the more strict scenarios as less psychologically costly, leading them to still perceive opportunities for connection, choice, and pleasure when a restrictive number of people could be invited. This is because the perceived concerns associated with more relaxed scenarios may lead them to discount the psychological benefits associated with these scenarios.

Method

Procedure and Sample

Between November 16 and 20, 2020, 6,342 participants completed an online questionnaire distributed by Facebook advertising and local newspapers. We excluded 9.24% of the participants from this sample because they completed the questionnaire in less than 200 s. From the final sample (N = 5,756; 65.7% female; M_{age} = 45.6, range: 18–89), 33.4% had a Master's degree, 39.8% had a Bachelor's degree, 22.3% graduated in secondary school, and 4.5% had no education or did not graduate in secondary school. In total, 11.4% were unemployed, 10.6% worked part-time, 16.6% were retired, and 61.4% worked full-time. Only 19.3% reported having no partner, and they had, on average, 0.9 children living at home (range: 0–4). All participants completed an informed consent explaining that the data

would be handled confidentially, all personal information would be recorded, and no negative consequences would occur when quitting the questionnaire earlier.

Scenarios

After assessing participants' sociodemographic variables (i.e., age, gender, education level, status of employment, civil status, and number of children living at home), four different scenarios for the upcoming Christmas holidays were presented. The main instructions were to answer questions on how people wanted to celebrate Christmas this year, given the emerging COVID-19 situation at that time in Belgium. We emphasized that four hypothetical scenarios would be presented and that we were curious to know what people think about these scenarios. The order did not change between participants. The first scenario, labeled as "One close contact," included the measures that were valid at that time. Each family could invite one close contact extra (on top of household members), meaning that no physical distance, face-covering, or ventilation was required. The second scenario, "Two extra visitors" included a small relaxation in that each family could invite two extra visitors next to the close contact. Here, it was specified that these two visitors had to respect important measures (1.5 m social distance, ventilation inside the house or, by preference, see them outside the house). The third scenario, "Four extra visitors," was equal to the second scenario with the difference of having four visitors instead of two. The fourth and final scenario, labeled "Carte blanche" described a total relaxation in which each family could celebrate Christmas without any restrictions. Each scenario was followed by a set of items to assess the forecasted psychological balance in terms of affective (i.e., autonomy, relatedness, pleasure, and concerns), cognitive (i.e., perceived strictness), and behavioral outcomes (i.e., probability to adhere). In the end, we asked each participant to indicate the one scenario that they preferred most as a forced choice.

The median of the total duration was 980 s (16.3 min). The syntax and study materials could be found via https://osf.io/fuqa3/. Before closing, participants were thanked and informed that they had the chance to receive a summary of the results. The procedure used in this study was approved by the ethical committee of Ghent University (no. 2020/174).

Measures

Risk Perception

Participants' level of risk perception was measured by two pairs of two items assessing people's perceived likelihood of being contaminated (probability aspect; 1 = *very small* to 5 = *very large*) and to what extent they expect the symptoms to be serious (severity aspect; 1 = *totally not serious* to 5 = *very serious*). One pair of questions addressed the risk for oneself (α = .83), and the other pair inquired about the risk of the population (α = .92). After both items within each pair were multiplied (Wolff et al., 2019), both pairs were aggregated to a total score of risk perception, showing a good internal consistency (α = .82).

Motivation to Adhere to Sanitary Measures

Participants' autonomous motivation to adhere to the corona measures was assessed with an adapted version of the Behavioral Regulation in Sport Questionnaire (Lonsdale et al., 2008). After the stem "Over the past week, I've adhered to these measures because," people answered to 4 items (e.g., "...I find it personally relevant," α = .81) using a 5-point Likert scale ranging from 1 (= *totally disagree*) to 5 (= *totally agree*).

Evaluation of Scenarios

After each scenario was presented, a set of items was conducted to assess participants' evaluation. Except for perceived strictness and probability of adherence, it was asked to rate all items on a 5-point scale going from 1 = *totally disagree* to 5 = *totally agree* and followed the prefix "By this scenario, ...".

Perceived Strictness

First, we asked participants to rate whether the scenario was too lax, perfect, or strict. The higher the score, the more strict the scenario is being perceived.

Satisfaction of Autonomy and Relatedness

Second, expected perceived psychological need satisfaction was measured by a single item for autonomy ("... I would experience choice") and relatedness ("... I would feel connected to those people that are important to me"), based on the Basic Psychological Needs Scale (BPNS; Chen et al., 2015).

Pleasure

The following four items were used to measure how much pleasure participants expected to perceive during the Christmas holidays: "... I think it will be a nice Christmas"; "... I think I won't be amused on Christmas"; "... I am excited about Christmas"; and "... I think Christmas won't be the same as I would like to have it this year." With recoding the second and the fourth item, Cronbach's αs ranged across all scenarios between .83 and .86.

Concerns

Three items assessed the concerns regarding the expected evolution of the situation ("... I would be more concerns

regarding how the health situation of the total population will evolve"), personal health ("... I would feel more uncertain about my own health."), and health of the visitors ("... I would feel more uncertain about the health of my visitors."). Averaging this set of items for each scenario, Cronbach's αs ranged between .79 and .89.

Probability of Adherence

As a behavioral outcome, we asked to provide a personal estimation to what extent they would adhere to the scenario on a 5-point scale going from 1 = *very small chance* to 5 = *very large chance*.

Results

Preliminary Analyses

A series of multivariate analysis of variance (MANOVA) was performed to assess the effects of categorical background variables (i.e., gender, work situation, and education level) on the study variables, showing significant results for gender (Wilk's lambda = .94; $F(8, 1{,}554) = 11.4$, $p < .001$, $\eta^2 = .06$) and work situation (Wilk's lambda = .88; $F(16, 3{,}108) = 6.40$, $p < .001$, $\eta^2 = .03$). Compared to female participants, univariate analyses showed that male participants scored lower on risk perception ($M_{male} = 2.01$ vs. $M_{female} = 2.20$), autonomous motivation ($M_{male} = 3.83$ vs. $M_{female} = 4.02$), and expected concerns ($M_{male} = 3.15$ vs. $M_{female} = 3.38$). Relative to unemployed participants, those working full-time, half-time or doing householding, the retired participants scored higher on risk perception ($M_{retired} = 2.37$ vs. $M_{unemployed} = 2.12$, $M_{full\text{-}time} = 2.06$, $M_{half\text{-}time} = 2.21$, $M_{householding} = 2.18$), autonomous motivation ($M_{retired} = 4.28$ vs. $M_{unemployed} = 3.92$, $M_{full\text{-}time} = 3.86$, $M_{half\text{-}time} = 4.04$, $M_{householding} = 4.03$), expected autonomy ($M_{retired} = 3.49$ vs. $M_{unemployed} = 2.99$, $M_{full\text{-}time} = 3.07$, $M_{half\text{-}time} = 3.14$, $M_{householding} = 3.29$), and expected relatedness ($M_{retired} = 4.04$ vs. $M_{unemployed} = 3.67$, $M_{full\text{-}time} = 3.80$, $M_{half\text{-}time} = 3.88$, $M_{householding} = 3.95$) when evaluating the scenarios (all univariate analyses had p-value < .001).

Associations of continuous background variables (i.e., age, number of children at home) with the current study variables were assessed by Pearson correlations. Table 1 shows that age and number of children at home were positively correlated with risk perception and autonomous motivation. Across scenarios, age was related to less perceived strictness, more expected autonomy and relatedness, more expected concerns, and less expected pleasure. The number of children was related to lower risk perception and higher expected pleasure across all scenarios. Risk perception correlated positively with autonomous motivation, and both related to less perceived strictness, more expected autonomy and relatedness, more expected concerns, and a greater probability to adhere to the corona measures. The associations with expected pleasure were rather small and showed an opposing pattern.

Objective 1: Scenario Evaluation

To examine the effect of induced restrictiveness, we performed a series of linear mixed models with scenario (4 levels) as a within-subject predictor, all background variables as between-subject covariates in the prediction of the study variables, a random intercept of ID (subjects) and a random slope of the predictor *scenario* (see Table 2). In order to test this, we performed a post hoc sensitivity power analysis (at least 80%) using the WebPower R package (Zhang & Yuan, 2018) with an α of .05 (two-tailed), a minimum effect size of 0.8, a general correlation structure and the current sample size, resulting in the power of .99. Showing evidence for all outcomes, Tukey's post hoc analyses provide a more fine-grained insight into the exact pattern of between-scenario differences. In doing so, there was a decrease in perceived strictness across four situations, with the "Carte blanche" scenario as the least strict one. Across the first three scenarios "One close contact," "Two extra visitors," and "Four extra visitors," both expected autonomy, relatedness, pleasure, and also concerns increased. In the last scenario, "Carte blanche," the expected psychological benefits and the probability of adherence decreased significantly while the expected concerns increased strongly, accounting for a curvilinear pattern of results. In line, only 8.1% of the sample denoted this scenario as the most preferable when they needed to indicate their preferred scenario through a forced choice. Scenarios "One close contact," "Two extra visitors," and "Four extra visitors" did not differ substantially from each other with, respectively, being preferred by 29.6%, 27.4%, and 34.9% of the sample. Next to these main effects, the standard deviations in Table 2 indicated that there was substantial variance in these scenario evaluations. In the next part of the analysis, we assess the moderating role of sociodemographic and psychological background variables.

Objective 2: Examination of Moderation Variables

Moderation effects were analyzed by a series of linear mixed regression modeling, including children living at home, gender, and work situation as covariates; scenario as a within-subject predictor; age, partner, risk perception, and autonomous motivation as between-subject predictors;

Table 1. Descriptive statistics and Pearson correlations between measured variables

	M	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age	45.6	14.48									
2. Number of children living at home	0.91	1.14	−.18***								
3. Risk perception	2.14	0.72	.19***	−.10***							
4. Autonomous motivation	3.96	0.93	.23***	−.05***	.49***						
Scenario evaluations											
5. Perceived strictness	1.88	0.49	−.21***	.04**	−.37***	−.57***					
6. Expected autonomy	3.15	0.84	.27***	−.07***	.30***	.60***	−.47***				
7. Expected relatedness	3.84	0.70	.24***	−.03*	.15***	.35***	−.24***	.52***			
8. Expected concerns	3.30	0.83	.06***	−.08***	.50***	.41***	−.31***	.13***	.01		
9. Expected pleasure	2.90	0.55	−.12***	.14***	−.06*	.06**	−.08***	.16***	.15***	−.14***	
10. Probability of adherence	2.96	0.84	−.05***	.03**	.05***	.17***	−.08***	.06***	.03	.06***	.26***

Note. *M* = Mean; *SD* = Standard Deviation. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 2. Descriptive statistics and variance analyses between scenarios by study variables

	Scenario Mean (*SD*)							
Variable	One close contact	Two extra visitors	Four extra visitors	Carte blanche	*F*(3, 17,241)	β_{linear}	$\beta_{curvilinear}$	η_p^2
Perceived strictness	2.59^a (0.57)	2.17^b (0.76)	1.64^c (0.69)	1.12^d (0.34)	13,132.51***	−.67***	−.03***	.70
Expected autonomy	2.72^a (1.24)	3.06^c (1.13)	3.15^d (1.17)	2.92^b (1.36)	153.62***	.06***	−.12***	.03
Expected relatedness	2.63^a (1.28)	3.02^c (1.22)	3.25^d (1.24)	2.94^b (1.36)	272.38***	.10***	−.13***	.05
Expected concerns	2.50^a (1.01)	2.83^b (1.11)	3.28^c (1.22)	4.05^d (1.09)	4,367.92***	.45***	.09***	.43
Expected pleasure	2.43^a (0.96)	2.93^b (0.99)	3.27^c (0.96)	2.94^b (1.10)	230.13***	.20***	−.20***	.11
Probability of adherence	3.21^b (1.53)	3.17^b (1.49)	3.15^b (1.59)	2.14^a (1.56)	691.9***	−.05***	−.22***	.11

Note. Letters refer to multiple comparison Tukey post hoc tests ranged from low to high. ***All *p*-values were < .001.

and two-way crossover interactions between the moderators and scenarios.

The results of the curvilinear linear mixed regression models can be found in Table 3. All models were checked in terms of their diagnostics (residuals normality, homoscedasticity, influential observations, and random effects). First, above and beyond the main effect of the scenario (i.e., Objective 1), risk perception and autonomous motivation were both associated with less perceived strictness, more expected autonomy, relatedness, and concerns, and a higher probability of adherence. The autonomous motivation was associated with more pleasure, while risk perception was significantly related to less pleasure. Although both risk perception and autonomous motivation are correlated $r = .49$ ($p < .001$), models were checked for multicollinearity by Variance-Inflation Factors resulting in no higher values than 1.3, indicating no multicollinearity. Also, results did not differ when testing the models separately for risk perception and autonomous motivation.

Second, most importantly, moderation effects indicated that more strict scenarios were associated with higher strictness, lower expected autonomy, relatedness, pleasure, concerns, and lower chances of adherence when participants were younger. For instance, the increasing pattern of expected concerns across scenarios (i.e., from "One close contact" to "Carte blanche") was moderated, such that younger participants did not show this increasing pattern, only up until the last scenario. Those who were older showed a curvilinear pattern with, for instance, increasing levels of expected relatedness leveling off when scenarios become more relaxed. This same pattern of moderation effects emerged for those living without a partner and individuals scoring low on risk perception and autonomous motivation. For instance, those having low levels of risk perception showed increasing patterns of expected autonomy, relatedness, pleasure, and probability of adherence when scenarios were more relaxed. Moderation analyses for autonomous motivation were performed using behavior-specific measurements (i.e., hand washing, physical distancing, restricting social contact, wearing mouth mask, and average of these four) showing a similar pattern of findings for the set of outcomes. Given the curvilinear pattern, they also expected more concerns and a higher probability of adhering to the measures when evaluating the "Carte blanche" scenario. In Figures 1A–1F, one example for each outcome is visualized.

Table 3. Standardized coefficients (with η_p^2) of main and interaction effects of quadratic linear mixed modeling

	Perceived strictness	Expected autonomy	Expected relatedness	Expected pleasure	Expected concerns	Probability of adherence
Gender	.04*** (.01)	.02 (.00)	.01 (.00)	.01 (.00)	−.01 (.00)	−.00 (.00)
Work situation	.00 (.00)	.02 (.00)	.03** (.00)	−.02 (.00)	.02 (.00)	−.01 (.00)
Number of children living at home	−.02* (.00)	.00 (.00)	−.03** (.00)	.05*** (.01)	.00 (.00)	.01 (.00)
Main effects						
Scenario [degree]	−.96*** (.12)	.68*** (.02)	.46*** (.07)	.81*** (.12)	.15*** (.00)	.49*** (.11)
Scenario [2nd degree]	−.53*** (.04)	−.11** (.00)	.03 (.00)	.20** (.00)	.40*** (.02)	−.22*** (.00)
Age	−.03*** (.00)	−.06*** (.01)	−.03** (.00)	−.04* (.00)	−.01 (.00)	−.04*** (.00)
Civil status	−.03*** (.00)	−.01 (.00)	.00 (.00)	−.02 (.00)	.03*** (.00)	.00 (.00)
Risk perception	−.07*** (.02)	.01 (.00)	−.01 (.00)	−.05*** (.01)	.18*** (.08)	−.01 (.00)
Autonomous motivation	−.30*** (.22)	.07*** (.01)	.08*** (.01)	.07*** (.01)	.34*** (.23)	.10*** (.03)
Moderation effects						
Scenario [degree] × Age	.13*** (.01)	−.11*** (.00)	−.27*** (.01)	−.29*** (.01)	−.20*** (.01)	−.33*** (.02)
Scenario [2nd degree] × Age	.03* (.00)	.11*** (.00)	.09*** (.00)	.02 (.00)	−.03 (.00)	.14*** (.00)
Scenario [degree] × Civil status	.05*** (.00)	−.06** (.00)	−.07*** (.00)	.01 (.00)	−.05*** (.00)	−.07*** (.00)
Scenario [2nd degree] × Civil status	.02* (.00)	.06** (.00)	.05** (.00)	.01 (.00)	−.05*** (.00)	.09*** (.00)
Scenario [degree] × Risk Perc.	.06*** (.00)	−.15*** (.00)	−.09*** (.00)	−.23*** (.01)	−.07*** (.00)	−.18*** (.00)
Scenario [2nd degree] × Risk Perc.	.06*** (.00)	−.02 (.00)	−.02 (.00)	−.00 (.00)	−.07*** (.00)	.01 (.00)
Scenario [degree] × Auto. Mot.	.05** (.00)	−.32*** (.01)	−.75*** (.04)	−.65*** (.07)	.64*** (.06)	−.52*** (.10)
Scenario [2nd degree] × Auto. Mot.	.40*** (.03)	−.14*** (.00)	−.29*** (.01)	−.44*** (.01)	−.19*** (.01)	−.16*** (.00)
Random effects						
σ^2	0.15	0.83	0.98	0.61	0.43	1.59
τ_{00}	0.37_{ID}	1.85_{ID}	1.21_{ID}	0.85_{ID}	0.91_{ID}	0.82_{ID}
τ_{11}	$0.01_{ID.scene}$	$0.28_{ID.scene}$	$0.16_{ID.scene}$	$0.12_{ID.scene}$	$0.07_{ID.scene}$	$0.13_{ID.scene}$
ρ_{01}	-0.89_{ID}	-0.92_{ID}	-0.86_{ID}	-0.92_{ID}	-0.80_{ID}	-0.83_{ID}
ICC	0.40	0.69	0.55	0.58	0.68	0.34
N	$4{,}740_{ID}$	$4{,}740_{ID}$	$4{,}740_{ID}$	$1{,}627_{ID}$	$4{,}740_{ID}$	$4{,}740_{ID}$
Observations	18,960	18,960	18,960	6,508	18,960	18,960
Marginal R^2/Conditional R^2	.588/.754	.042/.151	.090/.245	.187/.264	.462/.658	.217/.304

Note. Risk Perc. = risk perception; Auto. Mot. = autonomous motivation; σ^2 = residual variance; τ_{00} = variance term for random intercept (i.e., variability of the intercept across subjects); τ_{11} = variance term for random slope (i.e., variability of the slope across scenes); ρ_{01} = correlation between random intercept and slope; ICC = intraclass correlation; *N* = number of observations included in the model. *$p < .05$; **$p < .01$; ***$p < .001$.

Discussion

Beginning in November 2020, the Belgian government was facing an extraordinary psychological challenge. A second lockdown had been announced to keep the rising number of infections and hospitalizations under control. In an attempt to motivate the public for these restrictive measures, politicians indicated that this extra effort was needed to "preserve" Christmas, a period during which many people typically strengthen family ties. Yet, with large numbers of infections and hospitalizations, it became clear that it would be difficult to relax the measures during the upcoming Christmas celebrations from a virological perspective. On the other hand, psychological and adherence problems were feared if a set of too strict measures were maintained, with citizens expressing anger, defying the measures, or experiencing loneliness and mental health problems (Vrt, 2020). This debate provided an opportunity for the present research to study the expected affective, cognitive, and behavioral benefits and costs associated with different hypothetical Christmas scenarios. Apart from studying the main effects, a second key goal was to examine whether and how these evaluations would be affected by different personal characteristics.

Joint Role of Strictness, Age, and Psychological Characteristics

The first objective of this study was to contrast the expected psychological pros and cons associated with the four scenarios. As the different scenarios were experimentally varied in terms of their restrictive social nature, the possibility of having only a single visitor at home was perceived as the most strict scenario with the possibility to invite an unlimited number of relatives and friends (thus resembling

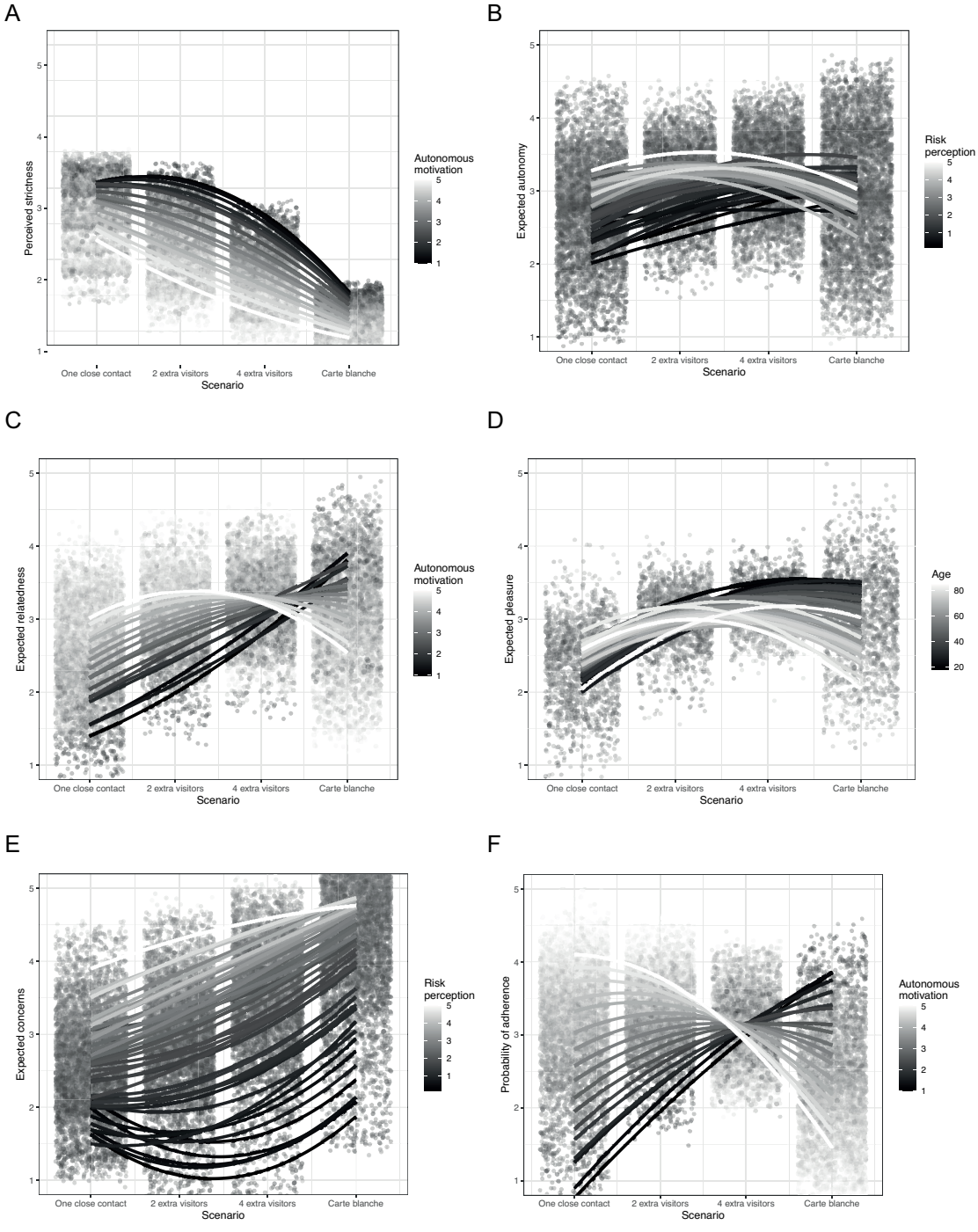

Figure 1. Graphical display of scenario by moderator effect for diverse outcomes. Dots on the background are added to represent the variation in scores between scenarios. These are jittered to a position of 0.5 around the score for the sake of clarity in the figures.

a pre-corona Christmas period) being perceived as the laxest situation. The scenario with two visitors or close contacts was close to the midpoint of the scale, suggesting that it was perceived – on average – as neither too strict nor too lax. At the same time, there was no one-to-one relation between a scenario and its perceived strictness, as some participants even perceived the most strict scenario (i.e., one visitor) as too lax and others perceived the laxest scenario (i.e., unlimited number of visitors) as too strict. For all outcomes, a curvilinear effect was observed.

In moving from the most restrictive to the most relaxed scenario, the probabilities of adherence and the increasing

expected levels of the psychological benefits leveled off, while the expected concerns showed a steep increase from four to an unlimited number of visitors.

The pattern of findings for participants' forced preferences differed in similar ways. Presumably, the population was aware of the risks of infection, leading them to reject the unlimited visitor scenario, even if the government had installed it. That is, people may have willingly engaged in self-control (Muraven, 2008) to mitigate the risks associated with an unlimited number of visitors.

A second objective involved examining the psychological and sociodemographic factors that color participants' expectations. The standard deviations of each condition-specific outcome were large, suggesting that there was substantial heterogeneity – almost polarization – regarding the different forecasted effects of each scenario. The pattern of moderation was very similar across all psychological benefits and concerns with older individuals and those with higher risk perceptions and autonomous commitment to adhere to the sanitary measures perceiving the more restrictive scenarios as equally beneficial in fostering relatedness, autonomy, and pleasure. Possibly, in line with research concerning affective forecasting, which shows that people can be misguided based on the values they pursue (Sheldon et al., 2010), individuals with low-risk perception or whose behavior is externally rather than internally regulated are overly optimistic in their forecasts of the benefits of a lax scenario on their psychological well-being. Apart from the main effects of age, autonomous motivation, and risk perception, older individuals and those high on autonomous motivation and risk perception perceived the expected concerns to be linearly increasing with increasing relaxations. In contrast, for younger individuals and those low in risk perception and autonomous motivation, all more restrictive scenarios came with similar levels of expected concerns, with only the Carte blanche scenario coming with increased concerns. These findings are in line with previous studies showing that age (e.g., Carlucci et al., 2020), autonomous motivation (e.g., Legate & Weinstein, 2021), and risk perception (e.g., Byrne et al., 2021; Wise et al., 2020) predict greater adherence to the sanitary measures, both concurrently and over time (Morbée, Vermote, et al., 2021).

Overall then, this moderation provides a deeper insight into why the first three scenarios would be equally adhered to. As can be noticed in Figure 1, the spreading across the condition means for the first, second, and fourth scenario is substantial. Instead, the standard deviation for the third scenario (i.e., 2 visitors) was more limited, suggesting that – at least in terms of anticipated adherence – this was the "consensus" scenario. The huge standard deviation across the average for the three other scenarios could be accounted for by risk perception and autonomous motivation. While people low on risk perception or autonomous motivation would not adhere to the scenario with one or two visitors, as these are perceived as too strict, people high on risk perception and autonomous motivation would not adhere to the Carte blanche scenario as it was too lax for them. The reversed pattern for these two subgroups clearly illustrates the increasing division and even polarization politicians were facing at the time.

Theoretical and Policy Implications

The present findings shed a unique light on the interplay between dynamics of safety, relatedness, and autonomy, which all represent critical factors underlying individuals' mental health (Vermote et al., 2021; Vansteenkiste et al., 2020). In exchange for health protection and safety, citizens are willing to limit their social contacts. Yet, the decision to restrict one's social contact with Christmas is not necessarily experienced as imposed and pressured. Instead, individuals who perceive the measures as valuable and still see risks are more likely to choose restrictive scenarios. Thus, in the given circumstances, many citizens did not express their autonomy through the desire to meet an unlimited number (negative freedom) but through a willing consent to the collective, health good that needed to be preserved in the precarious situation (positive freedom; Fromm, 1976). Hence, limits do not necessarily constrain people but can be experienced as a much-needed pathway to a healthy and safe situation in a crisis (Vansteenkiste et al., 2018).

In communicating these findings to policymakers, we presented these factual results and provided the following recommendations to support them in making an informed decision. First, the Carte blanche scenario – although never on the political table as a real option – was not a preferred one by the public. This finding illustrates that people are reasonable and can reflect deliberately on the situation, which leads them to willingly adapt to what is needed to protect themselves and be close to others. Second, we highlighted that, from a psychological perspective, the scenario with two visitors was the preferred option: it was perceived to be moderate in terms of strictness vs. laxness, and it entailed, on average, more expected autonomy, relatedness, and pleasure than when people would only be allowed to invite a single person. Further, we reasoned that allowing some additional flexibility and choice in the number of visitors would prevent individuals low on risk perception or autonomous motivation from defying the measures altogether through reactive processes (Brehm, 1966; Van Petegem et al., 2015). The option of two visitors would still be perceived as reasonable by those high on risk perception or autonomous motivation, who may compensate for the less prudent acting of those low on risk perception or autonomous motivation by being more restrictive for themselves than allowed by the government.

Limitations

First, a rather selective sample participated in the study, with highly educated, female, and older people being overrepresented. The prevalence numbers (e.g., percentage of adherence) for each scenario should therefore be interpreted with caution, and the question can be raised whether the findings generalize to a more representative sample. At the same time, the critical question did not concern the absolute occurrence of outcomes but the scenario differences and the potential role of moderators herein.

Second, at the methodological level, the presentation of scenarios was not counterbalanced such that sequence (i.e., comparison with the preceding scenario) or/and order (i.e., the "Carte blanche" scenario always appeared at the latest position) effects may confound the observed findings. This means that the estimation of our main effects due to the predictors in the models could partially reflect order effects. Future research should definitely take order effects into account by means of counterbalancing the scenarios.

Further, a common criticism of a vignette methodology is its limited realism and generalizability because both the scenarios and outcomes do not necessarily happen outside the experimental setting (Hughes & Huby, 2002). Several studies, therefore, recommended presenting the vignettes as vividly as possible, for example, with the help of audio, pictures, or even virtual reality (e.g., Aguinis & Bradley, 2014). Also, the conditions in the current study distinguished from each other in a number of features, rather than having only one different element, which happens often in experiment designs. When doing this, this would result in an unfeasible number of potential scenario's. In addition, the possible Christmas scenarios during the COVID-19 crisis were an extremely hot topic at the time this study was conducted, which we do not believe that the ecological validity of this study was compromised. Yet, the negative side-effect of this choice is that it remains unclear which of the multiple manipulated factors can account for observed mean-level differences.

Fourth, although we relied on existing studies to select sociodemographic and psychological characteristics as plausible moderators, other unstudied background and psychological variables might have a significant role in people's evaluation of the scenarios. For instance, individuals with stronger families ties or values may have differently evaluated the different scenarios.

At last, we only included a post hoc power analysis instead of performing a power analysis a priori to the conduction of the study. This could have been useful, with a priori analyses helping us ascertain the sample size necessary to obtain a desired level of power for a specified effect size and level of significance. However, this involved the use of a priori estimates of effect size and standard deviations (Harris, 1997), which, for instance, could be obtained by conducting a pilot study. To overcome this limitation, we performed a post hoc power analysis to help us interpret the results, showing a sufficient level of power. For instance, nonsignificant results in a study with high power contribute to the body of knowledge because power can be ruled out as a threat to internal validity (Onwuegbuzie & Leech, 2004).

Conclusion

The present study sheds light on the dynamic interplay between contextual features (i.e., strict vs. relaxed set of measures), psychological (i.e., motivation, risk perception), and sociodemographic (i.e., age, living status) characteristics in the prediction of individuals' anticipated benefits and costs of social gathering during Christmas. The findings are both practically appealing and theory-consistent, as different individuals saw different merits and costs associated with more restrictive and lax scenarios. As hypothesized, citizens are not by definition in favor of relaxations when their health is potentially at risk. Autonomously motivated individuals and those high on risk perception appear ready to volitional restrain their social contacts, freedom, and pleasure in favor of keeping their concerns under control. This is a hopeful message upon which policymakers can ground their decisions in crisis times.

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Conflict of Interest
The authors declare they have no conflict of interest.

Publication Ethics
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Open Data
The data (by request) and R scripts to carry out the analyses are publicly available on Open Science Framework: https://osf.io/fuqa3/ (Waterschoot, 2021).

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ORCID
Joachim Waterschoot
https://orcid.org/0000-0003-0845-9310
Sofie Morbée
https://orcid.org/0000-0002-0444-1917
Omer Van den Bergh
https://orcid.org/0000-0001-6394-7363

Joachim Waterschoot
Faculty of Psychology
Department of Developmental, Personality, and Social Psychology
Ghent University
Henri Dunantlaan 2
9000 Ghent
Belgium
joachim.waterschoot@ugent.be