COVID-19 illegal social gatherings: Predicting rule compliance from autonomous and controlled forms of motivation

Frédéric Guay, Julien S. Bureau, Johannie Boulet, and Richard Bradet

Department of fundamentals and practices in Education, Faculty of Education, Université Laval

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Author Note

Correspondence concerning this article should be addressed to Frederic Guay, Titulaire de la chaire de recherche du Canada en motivation, persévérance et réussite scolaires, Département des fondements et pratiques en éducation, Pavillon des sciences de l'éducation, 2320, rue des Bibliothèques, Local 942, Université Laval, Québec (Québec) G1V 0A6, email : Frederic.Guay@fse.ulaval.ca

Abstract

The purpose of this study was to identify predictors of rule compliance regarding private gatherings during the 2020 Christmas holidays in the province of Quebec (Canada), where gatherings were ruled as illegal, with few exceptions. We used the self-determination theory framework to predict rule compliance as a function of autonomous, controlled-approach and controlled-avoidance motivations. Moreover, we measured psychological distress among participants as well as anxiety of COVID-19 exposure. Motivation and psychological distress measures were taken a couple of days prior to the holiday period, whereas rule compliance was measured approximately 10 days later, in early January. A total of 1332 individuals filled the first online survey and 627 completed the follow-up measure. The factorial structure of the motivational instrument was supported. Rule compliance was predicted positively by autonomous motivation, but negatively by controlled-avoidance motivation. Controlled approach was not a significant predictor of rule compliance. These results show that approach and avoidance orientations in controlled motivation have distinct predictive power, which has implications for policy-enforcing by governments.

Key words: autonomous motivation; compliance; self-determination; COVID-19; Approach-avoidance

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During the 2020 end-of-year holidays, the government of Quebec had asked its population not to participate in any private gatherings outside of their "family bubble", with the exception that individuals who lived alone were authorized to designate another person or family to visit. These rules were highly restrictive given the fact that gatherings during Christmas holidays are well anchored in cultural values. Moreover, these rules were an extension of two and a half consecutive months of forbidden household gatherings, which had been justified as ways to curb the infection rate prior to the holidays. Admittedly, the self-regulation of the population was therefore tested and the temptation to infringe these rules was expected to be high (Bergeron et al., 2020). Using self-determination theory (SDT, Ryan & Deci, 2017), we investigated predictors of governmental rule compliance regarding social gatherings during this period.

According to SDT, people will tend to follow the rules that are internalized in a volitional manner, even if they are prescribed by an external source such as governmental authorities. The degree of rule internationalization can be understood as the motivation people have for following these rules. Because rules are extrinsic, the various forms of extrinsic motivation (autonomous vs. controlled) are relevant in understanding internalization. With extrinsic autonomous regulation (identified regulation), individuals value the behavior and consider it personally meaningful or important. With controlled regulation, individuals rather feel an internal pressure (introjected regulation) or external pressure (external regulation) to comply, making it less autonomous (Ryan, 1993). Being motivated in a controlled fashion relates to the pursuit of internal esteem states (e.g. pride, positive regard) or to the avoidance of negative internal or external events (e.g. shame, rejection, punishment; Deci et al., 2013) encompassing two controlled orientations: approach and avoidance (Gagné et al., 2015; Koestner & Losier, 2002).

Assor, Vansteenkiste, and Kaplan (2009), observed that most measures of introjected regulation (one of the two types of controlled motivation) have items that capture the avoidance dimension. They theorized that these items steered interpretation of introjected regulation's effects toward the negative side. Consequently, they hypothesized that introjected approach regulation might not be as negative in its consequences for human functioning as the avoidance orientation of introjection might be. They further argued that the potential beneficial role of introjected approach regulation is in line with theories emphasizing the important adaptive functions of self-esteem concerns, an idea in line with Carver and Scheier's (1999) contentions. Chanal et al. (2019) also tested the approach-avoidance distinction for introjected and external regulations and provide support for their difference. In this study, we studied introjected and external regulations globally under the concept of controlled regulation taking into account the approach-avoidance distinction.

Controlled approach-avoidance facets have different predictions of outcomes, with the approach orientation showing stronger correlation with positive outcomes (Assor et al., 2009). Moreover, controlled-approach reasons being more adaptive than controlled-avoidance ones could have important implications for policy. In such a case, governmental authorities might focus on engaging prompts that appeal to the good that people can bring onto others (e.g., "please show to your relatives how you care about the health of people who are more vulnerable") rather than to negative events people could experience if they don't follow rules (e.g., "avoid the shame of getting other people sick, stay home").

While autonomous and controlled regulations have shown strong predictive power of behaviors, controlled regulation is consistently the less predictive of behavioral tendencies across many domains (Howard et al., 2021). With regards to adherence to health recommendations, autonomous motivation is usually a stronger predictor than controlled motivation (Martela et al., 2021). To date we have been unable to review studies linking autonomous and controlled motivation to explain compliance for COVID-19 preventive measures such avoiding social gatherings, handwashing, wearing a mask, and

getting a vaccine, although unpublished works have been cited in a literature review by Martela et al. (2021). However, a recent study by Legate and Weinstein (2021) indicate that increases in autonomous motivation for staying at home predict more time spent at home, whereas increases in controlled motivation did not relate.

Mental health has shown important decline during the COVID-19 pandemic (Vindegaard & Benos., 2020). Psychologically distressed individuals may have a lower capacity to follow government-imposed regulations due to difficulties in self-regulation (Strauman & Eddington, 2017). While mental health problems can interfere with compliance, anxiety to catch COVID-19 could motivate people to comply to regulations (Sauer et al., 2021).

In light of the above, we propose the following hypotheses: autonomous regulation will be a positive predictor of rule compliance, more so than controlled approach and avoidance. However, controlled approach should predict rule compliance more positively than controlled–avoidance. These predictions will be observed over and above psychological distress, anxiety to catch COVID-19 as well as gender, educational level, age, and marital status.

Method

Participants and procedure

This study received research ethics committee approval, but was not funded by any granting body. Participants were recruited via posting on multiple Facebook groups and ads, asking to take part in a short survey. The survey was in French and available between December 19 and December 24, 2020. The survey could only be completed by Quebecers who were older than 18 years and who lived in an area where social gatherings were forbidden. A total of 1332 persons participated in the survey. All descriptive statistics are presented in Table 1. Women and people with postsecondary education are overrepresented in our sample. For those who filled the questionnaire, they were asked to provide their email for a follow-up measure that was to take place during the first week of January 2021. This follow-

up measure assessed rule compliance during the holidays. A total of 627 participants took part to the follow-up, for a response rate of 47%.

Measures

Motivation for rule compliance. To measure autonomous and controlled regulations (approach and avoidance) we adapted items from various motivational instruments in the SDT literature (Gagné et al., 2015; Guay, 2005; Vallerand et al., 1993). A total of 22 different items were generated (see Appendix). To evaluate the construct validity of items' scores, we have used the Exploratory Structural Equation Modeling (ESEM) approach with Mplus (version 8.3) which allow cross-loadings. By estimating cross-loadings, this method reduces inflation in correlations among latent factors (Marsh, Nagengast, & Morin, 2013). Two of the 22 items were removed for not respecting scale structure.

Psychological distress. The K6 (Kessler et al., 2002) was used in this survey to assess psychological distress. This instrument evaluates 6 symptoms over the last month (see Appendix). The K6 has strong psychometric properties and discriminate DSM-IV cases from non-cases (Kessler et al., 2002).

Anxiety for COVID-19. We developed a single item to assess COVID-19 infection anxiety: "Overall, how worried are you about contracting COVID-19 in the next few weeks?" This item was completed on a 4-point rating scale ranging from not worried at all (1) to a lot worried (4).

Rule compliance. To assess rule compliance, we developed three items based on behaviors that would break rules emitted by governmental authorities (see Appendix). Using these items, we were able to classify respondents into two categories: those who completely followed rules and those who did not. Only participants who answered never for all three items were classified as following the rules completely. Any other response pattern was classified as "not following the rules" (see the frequency in Table 2). Interestingly, nearly 51.5% of the people followed the rule to the letter. Although a dichotomous score is not usually recommended (DeCoster, Iselin, & Gallucci, 2009), it offers the possibility of identifying individuals with the greatest likelihood to infringe rules even if they stated

doing so infrequently. Moreover, the compliance measure seems truly categorical because more than 90% of the participants have scored 1 or 2 on each item. Finally, these three items are reliable (alpha = .70) thus measurement error is less susceptible to bias the results (DeCoster, Iselin, & Gallucci, 2009).

Results

Descriptive statistics are presented in Table 2. We performed an ESEM measurement model to evaluate the validity of items designed to assess all latent constructs used (see Table 3). Single-item variables were not embedded in this analysis. Results indicated that items loaded on their respective factor (> .52) while only minor cross-loadings were observed (<|.28|). Moreover, latent factor reliability was supported by Omega values over .80. Regarding missing values, participants who have completed both waves of data collection are more educated, older, more autonomously motivated, and have slightly lower psychological distress levels than those who completed the first wave only (see Table 4). Thus, those who have disclosed their participation (or not) in such gatherings have special characteristics. Based on this, we have decided to correct this potential threat to the validity of the study by using multiple imputations with Mplus (Madley-Dowd et al., 2019). Correlations among constructs are shown in Table 5. Factor scores were saved from this ESEM solution. Factor scores are particularly useful when the number of independent variables included in a regression model is high, as it is the case in this study. They offer more flexibility than completely latent scores and, as opposed to composite scores, they partly control for measurement error (Guay et al., 2021).

Results from the logistic regression are presented in Table 6. Two regression models are displayed, one with no imputation on missing values and the other one with multiply imputed data (20 imputed data files) for the 705 participants with missing data on rule compliance. In both solutions, autonomous motivation positively predicted rule compliance, while controlled-avoidance motivation negatively predicted rule compliance. No other factors were significant predictors of compliance. Parameter estimates were similar for both solutions, pointing to the stability of these results. However,

parameter estimates might be more precise with imputed data as the 95% confidence intervals range was more restricted.

Discussion

Rule compliance during a pandemic is crucial for public health measures to be successful. In this setting, controlled-avoidance motivation seems an important negative predictor of compliance. The more individuals said they intended to follow rules to avoid negative events (e.g., fines, interpersonal conflicts), the more likely they reported having broken special regulations on gatherings for the holiday period. However, individuals motivated in autonomous way were more inclined to have followed these rules. Controlled-approach, psychological distress, anxiety to catch COVID-19, gender, age, marital status and educational levels were non-significant predictor of compliance. These results lead to two important implications. First, they are in line with past research showing the importance of autonomous motivation for rule compliance (Martela et al., 2021). However, they also reveal something that has not been found previously, namely that the type of controlled motivation (Assor et al., 2009) matters to predict rule compliance. Controlled-avoidance motivation is a counterproductive motive to foster rule compliance. However, a recent study in the physical activity domain (More & Phillips, 2019) showed that both introjection-approach and avoidance positively correlated with physical activity levels. The fact that our study focused on controlled motivation, rather than exclusively introjected regulation, may explain this divergence in findings. Moreover, these results somewhat challenge the role of mental health and COVID-19 related anxiety in predicting rule compliance (Sauer et al., 2021), suggesting that they have little to no effect.

However, some limits should be acknowledged when drawing such conclusions from the findings. First, the sample is not representative of the adult population in Quebec. For example, the fact that the sample is more educated compared to the general population might have led to a higher proportion of persons who have followed the rule to the letter. Because the percentage of women in this study is

more important than in the general population of Quebecers (50.3% in the 2016 census), the results obtained might apply more for women, who have been shown to be more autonomously motivated compared to men (Vallerand et al., 1997). Second, findings are based solely on self-report questionnaires. Third, social desirability may have led some participants to bias their responses, especially regarding rule compliance. Fourth, this study took place during the holiday period, one where social gatherings are usually the norm, and where factors leading people to gather (e.g., religiousness, family size, habits) might differ when compared to a lockdown happening in other periods of the year. However, it is possible that participants who followed or broke the rules were acting consistently with behavior patterns that individuals had before the holidays. Because we do not have a measure of individuals' compliance to rules before holidays, it is impossible to conclude that autonomous motivation predicts an increase in rule's compliance. However, epidemiological data showed a strong second wave spike of infections surging in the two weeks following the holidays, suggesting that this time period was associated with different behavioral patterns in terms of social gatherings. Fifth, we did not measured perceptions of governments' communication style and leadership. This shortcoming should be interpreted in light of the fact that Montreal (one of the cities where this research was conducted) was the epicenter of the pandemic in Canada. The provincial government was quick to introduce a lock-down during the first wave, but in the following months, especially during the second wave (October 2020 to January 2021), the government was erratic in communicating reasons for following rules.

Public health officials have long recognized the importance of supporting community to follow public health measures. Even in the first half of the 20th century, with smallpox outbreaks, public health officials learned it was important to encourage the public's acceptance of the vaccine (Henderson, 1987). Nonetheless, there are still many governments that take a heavy-handed approach to control the virus. This article contributes to an interesting finding in that regard: the avoidant type of controlled

motivation is the one that will backfire whereas the approach one will produce no benefits and could even have secondary negative consequences for wellness (see Howard et al., 2021). Thus, in line with many findings in the motivation literature (Martela et al., 2021), one of the best possible solution that governments could put in place would be to justify the importance of the established rules so that we can better control the spread of COVID-19.

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Table 1.
Sample Description

Gender	*n*	*%*
Female	999	78.5
Male	274	21.5
Missing	59	-
	1332	100

Age (years)	*n*	*%*
18-30	388	30.3
31-40	330	25.7
41-50	319	24.9
51-64	193	15.1
65 and more	52	4.1
Missing	50	-
	1332	100

Schooling	*n*	*%*
Primary / secondary	72	5.6
College	167	13.0
University 1st cycle	530	41.3
University 2nd cycle	513	40.0
Missing	50	-
	1332	100

Marital Status	*n*	*%*
Living alone	294	23.2
Living with a partner	971	76.8
Missing	67	-
	1332	100

Table 2.

Descriptive statistics of the constructs measured in the study

Construct	*n*	*Mean*	*SD*	*Range*
Autonomous Motivation	1332	5.69	1.56	1 à 7
Controlled – avoidance	1332	3.70	1.42	1 à 7
Controlled – approach	1332	3.94	1.65	1 à 7
Psychological distress (K6)	1263	2.19	.84	1 à 5
Behavioral beliefs	1308	2.23	.78	1 à 4
Respect of the three rules	n	%		
Always respected each of the rules	323	51.5		
Do not respect each of the three rules	304	48.5		
	627	100		

Table 3.

Standardized Factor Loadings (λ) and Uniquenesses (δ) from the ESEM measurement model (n=1332)

Items	*F1 λ*	*F2 λ*	*F3 λ*	*F4 λ*	*δ*
Autonomous 1	**.80**	-.04	.08	.00	.28
Autonomous 2	**.83**	-.09	.04	-.02	.23
Autonomous 3	**.90**	.05	-.02	-.01	.20
Autonomous 4	**.79**	-.15	.12	-.04	.21
Autonomous 5	**.87**	.09	-.04	-.03	.28
Autonomous 6	**.66**	.03	.09	-.05	.48
Avoidance 1	.22	**.52**	.04	.02	.67
Avoidance 2	.15	**.58**	-.03	.01	.67
Avoidance 3	.18	**.58**	.05	.13	.57
Avoidance 4	-.11	**.47**	.17	-.02	.70
Avoidance 5	-.12	**.75**	-.11	-.00	.44
Avoidance 6	-.22	**.77**	-.12	-05	.38
Avoidance 7	-.13	**.42**	.28	-.06	.68
Approach 1	-.05	-.03	**.81**	.02	.41
Approach 2	.20	.09	**.56**	-.03	.49
Approach 3	-.12	.00	**.82**	.04	.42
Approach 4	.21	.05	**.53**	-.01	.54
Approach 5	.04	.05	**.78**	-.02	.34
Psych. Distress 1	.15	.11	-.01	**.65**	.56
Psych. Distress 2	-.12	.02	.02	**.75**	.38
Psych. Distress 3	-.06	.03	.04	**.55**	.68
Psych. Distress 4	-.09	-.07	.04	**.82**	.32
Psych. Distress 5	.06	-.02	-.06	**.85**	.31
Psych. Distress 6	.01	-.01	.00	**.74**	.46
Omega coefficient	.94	.80	.86	.88	

Table 4.
Comparison of students who responded to both times of measurement with those who responded only to time 1.

	Participate at Time 1 only		*Participate at Time 1 and Time 2*			
	n	*%*	*n*	*%*	*p*	*Odd ratio*
Gender						
Female	501	77.7	498	79.3	.48	1.10
Male	144	22.3	130	20.7		
Educational degree						
College or less	142	21.9	96	15.2	.002	.64
University	506	78.1	535	84.8		
Status						
Living alone	146	22.9	148	23.6	.76	1.04
Living as a couple	492	77.1	479	76.4		
	Mean	SD	Mean	SD	P	Cohen's *d*
Age	38.08	12.86	40.61	12.69	.0004	.20
Autonomous	5.50	1.69	5.89	1.38	<.0001	.25
Controlled – avoidance	3.71	1.44	3.68	1.38	.73	.02
Controlled – approach	3.87	1.69	4.02	1.60	.10	.09
Psychological distress (K6)	2.25	.86	2.14	.81	.03	.13
Anxiety- COVID	2.20	1.80	2.27	.76	.11	.05

Table 5

Correlations Among All Variables Used in the Present Study

		1	2	3	4	5	6	7	8	9
1.	Rules' compliance	-								
2.	Autonomous	.48*	-							
3.	Contr-avoid	-.29*	-.20*	-						
4.	Contr-app	.20*	.52*	.43*	-					
5.	Anxiety-Covid	.14*	.35*	.07	.29*	-				
6.	Psy. distress	-.13*	-.27*	.30*	-.01	.10*	-			
7.	Educational degree	.04	.13*	-.04	-.04	-.07	-.09*	-		
8.	Age	.21*	.30*	-.25*	.04	.09*	-.35*	-.12*	-	
9.	Gender	.03	-.09	-.09*	-.05	-.16*	-.10*	-.11*	.13*	-
10.	Living as a couple	.02	.02	.03	.05	.07	-.08*	.05	-.03	-.08*

Note: *p <. 05.

Contr-avoid: Controlled regulation – avoidance

Contr-app: Controlled regulation – approach

Psy. distress: psychological distress

Table 6

Odds Ratios with 95% Confidence Intervals and Betas from the logistic regressions for prediction of Always respected each of the rules without and with multiple imputations.

	Without imputation (n=620)			With imputations (n=1332)		
	OR (95%CI)	Beta	p	OR (95%CI)	Beta	p
Autonomous	2.70 (1.76-4.13)	.40	.000	2.53 (1.77-3.60)	.42	.000
Contr-Avoid	.53 (.41-.70)	-.26	000	.55 (.41-.72)	-.26	.000
Contr-App	1.30 (.96-1.76)	.11	.09	1.26 (.94-1.68)	.10	.12
Anxiety-Covid	.95 (.73-1.23)	-.02	.67	.93 (.73-1.19)	-.03	.55
Psy. Distress	1.22 (.95-1.57)	.08	.12	1.20 (.95-1.51)	.08	.12
Educational degree	1.00 (.89-1.13)	.00	.96	1.00 (.91-1.10)	.00	1.00
Age	1.01 (.99-1.03)	.05	.38	1.01 (.99-1.03)	.05	.29
Gender	1.26 (.79-2.00)	.04	.33	1.13 (.72-1.78)	.02	.61
In a relationship	1.12 (.73-1.71)	.02	.60	1.13 (.77-1.65)	.02	.55

OR >1 indicates increased occurrence of an event
OR <1 indicates decreased occurrence of an event
Contr-avoid: Controlled regulation – avoidance
Contr-app: Controlled regulation – approach
Psy. distress: psychological distress

Appendix.

Items used for the 3 types of motivation, rules compliance, and psychological distress (English and French versions)

Autonomous[1]

1. Because following this rule is important to me./Parce que suivre cette règle est important pour moi
2. Because I totally support this government rule./ Parce que j'appuie totalement cette règle du gouvernement
3. Because I find this rule important to save lives./ Parce que je trouve que cette règle est importante pour sauver des vies
4. Because I fully value the adoption of this rule./ Parce que je valorise entièrement l'adoption de cette règle
5. Because I find this rule important to relieve emergencies./ Parce que je trouve cette règle importante pour désengorger les urgences.
6. Because it is important for me to stay healthy./ Parce qu'il est important pour moi de rester en santé

Controlled – avoidance[1]

1. To avoid feeling guilty for not following this rule./ Pour éviter de me sentir coupable de ne pas suivre cette règle
2. Because I feel obligated to follow this rule./ Parce que je me sens obligé de la suivre
3. To avoid experiencing anxiety if I break this rule./ Pour éviter de vivre de l'anxiété si je contreviens à cette règle
4. To avoid having a conflict with someone./ Pour éviter d'avoir un conflit avec quelqu'un
5. To avoid receiving a fine./ Pour éviter de recevoir une amende
6. To avoid being denounced by a neighbor./ Pour éviter de me faire dénoncer par un voisin
7. To avoid being "sulked" or put aside by people important to me./ Pour éviter de me faire « bouder » ou mettre de côté par des personnes importantes pour moi

Controlled – approach[1]

1. To show others that I know the issues associated with Covid-19 well./ Pour montrer aux autres que je connais bien les enjeux associés à la Covid-19
2. To be proud of me./ Pour être fier de moi
3. To show others that I have more judgment than many people./ Pour montrer aux autres que j'ai plus de jugement que bien des personnes
4. To show others how respectful I am to this government issued rule. / Pour montrer aux autres à quel point je suis respectueux de cette règle émise par le gouvernement
5. To show people close to me that I care about the health of people who are more vulnerable./ Pour montrer aux personnes proches de moi que je pense à la santé des gens qui sont plus vulnérables

Psychological distress[2]

1. you felt hopeless/vous êtes-vous senti désespéré?
2. you felt restless or fidgety/vous êtes-vous senti agité ou ne tenant pas en place?
3. you felt that everything was an effort/ avez-vous senti que tout était un effort?
4. you felt worthless/ vous êtes-vous senti bon à rien?
5. you felt nervous/ vous êtes-vous senti nerveux?
6. you felt so depressed that nothing could cheer you up/ vous êtes-vous senti si déprimé que plus rien ne pouvait vous faire sourire?

Rule compliance[2]

1. During the holiday season, I held a gathering or gatherings with other people who did not live with me (and who do not live alone)/ Pendant le temps des fêtes, j'ai tenu un ou des rassemblements avec d'autres personnes qui ne vivaient pas avec moi (et qui n'étaient pas considérées comme étant des personnes seules).
2. During the holidays, I visited someone who lives alone with one or more people from other households/ Pendant le temps des fêtes, j'ai visité une personne seule avec une ou plusieurs personnes d'autres bulles familiales que la mienne
3. A person living alone came to visit me while at least one other person from another household was present/ Une personne seule est venue me visiter alors qu'au moins une autre personne d'une autre bulle familiale que la mienne était présente

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Note : [1] Items answered the following stem: "Please indicate your reasons for following [this government rule] for the Christmas holidays". These items were rated on a 7-point Likert-type scale ranging from strongly disagree (1) to very agree (7)-see Appendix. [2] Items were responded on a 5-point Likert-type scale ranging from never (0) to always (4). [3] These three items were rated on a 5-point Likert-type scale ranging from never (1) to almost always (5).