

## Article

# COVID-19 in New Zealand: The Moderating Effect of Involvement on the Roles of Attitudes and Subjective Norms

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**Abstract:** Popular theories that explain or predict behavioural intentions are based on people's attitudes and subjective norms. Their application is based on the (often implicit) assumption that people regard a subject (e.g., preventing the spread of COVID-19) as sufficiently important for them to formulate stable attitudes and subjective norms about it. As this assumption rarely holds for all people, the influence of attitudes and subjective norms in determining behavioural intentions changes depending on the importance of the subject. In other words, importance has a moderating effect on the relationship between intentions, attitudes, and subjective norms. We hypothesise that, as importance declines, the influence on intentions of attitudes decreases and the influence of subjective norms increases. This has important implications for efforts to encourage the adoption of preventative behaviours in relation to COVID-19 because promotional strategies designed to modify attitudes differ markedly from those designed to modify subjective norms. We test this hypothesis by analysing three different large-scale surveys about people's intentions, involvement, attitudes, and subjective norms regarding the spread of COVID-19 in New Zealand. The results support our hypothesis and highlight the importance of distinguishing between when the formation of behavioural intentions depends mainly on attitudes and when it depends mainly on subjective norms.

**Keywords:** behavioural intentions; subjective norms; COVID-19; health policy



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## 1. Introduction

It is commonplace for interested observers of the human condition to be alive to the fact that cognitive resources, including attention, are available to individuals in limited quantity. Yet this commonplace understanding is often implicitly ignored in the application of prominent theories relating to explaining or predicting behaviour based on attitudes and subjective norms [1–7]. An attitude is ‘an association between a given object and a given evaluation’ [8]. Subjective norms can be injunctive, such as ‘what I think others expect of me’ or descriptive, such as ‘what I perceive others do’ [9].

The application of theories that predict behavioural intentions in relation to a subject based on people's attitudes towards it requires the subject to be sufficiently important to each person for all of them to have engaged in the cognitive effort entailed in formulating an attitude [10]. This is rarely likely to be the case because people differ in what is personally important to them, and, given limited cognitive capacity [11], their need for subjective rationality can be expected to evoke strategic responses to subjects of various levels of interest to the individual.

For example, a subject that catches maximal attention can be expected to be treated with high levels of active decision-making, involving the thoughtful evaluation of appropriate behavioural responses [8]. Individuals who have invested time and effort in thinking about a subject are more likely to hold strong attitudes towards the subject [8,12], and those attitudes will be readily recalled from memory [8]. Hence, in these circumstances, models that predict behavioural intentions using attitudes and subjective norms are applicable.

A subject that is of no intrinsic interest at all can, and usually will, be ignored either by selective exposure or selective perception. In these circumstances, models that predict behavioural intentions using attitudes cannot be expected to predict intentions because attitudes and intentions, if not entirely absent, will be weak and unstable. However, a subject that cannot be ignored but is of low interest may provoke a strategic response of behaving with 'adequate' conformity to subjective norms if the behaviour, or expression of related attitudes, related to that subject is thought to be apparent to relevant others, when subjective norms stem from salient and important reference groups, and where self-relevant uncertainty is present [9].

It follows, then, that the relative contribution of attitudes and subjective norms to the formation of behavioural intentions can be expected to vary depending on the importance of a subject [13]. Consequently, we propose that the less the personal importance of a subject, the less will be the influence of attitudes, and the greater will be the influence of subjective norms on behavioural intentions. When normative compliance figures prominently as a need, subject importance (i.e., involvement) can be expected to trigger extended decision-making. The situation we are contemplating here is one where no need is sufficiently strong to have the effect of triggering extended decision-making. Our proposition is, therefore, that normative compliance determines behavioural intentions when intentions are not determined via extended decision-making.

The emergence of COVID-19 and its variants provides an opportunity to test this proposition because the subject of eliminating COVID-19 or slowing its spread enjoys universal awareness, beliefs and attitudes about it are widely discussed, and there are recommended behavioural responses that are observable by others.

In this paper, we test the hypothesis that the relative influence of attitudes and subjective norms on people's goal intentions to contribute to eliminating COVID-19 varies systematically with the importance they place on eliminating COVID-19. Goal intentions are the more general behavioural precursor to specific behavioural intentions such as the wearing of face masks (see [14]). That is, involvement moderates the relationship between intentions on the one hand and attitudes and subjective norms on the other. We based our approach to testing this hypothesis on the  $I_3$  framework [15]. We employed this framework in three large-scale public surveys conducted in New Zealand between 2019 and 2022 to gather data on attitudes towards, subjective norms about, and intentions to contribute to the goal of eliminating COVID-19 from New Zealand [16–18]. We then discuss the implications for policy and research.

The  $I_3$  framework is founded on the assumption that the allocation of attention and other cognitive effort is rationed and varies across a population. Working with the constructs of attitudes, beliefs, subjective norms, and behavioural intention, behaviour is modelled in the framework as being determined in the context of various degrees of 'involvement' with a policy issue and related policy interventions, the latter being specific recommended personal behaviours. Involvement reflects the relative importance of a subject based on its potential to contribute to the individual achieving satisfaction of functional, experiential, or self-expressive needs [8,19–22]. In describing the relative importance of a subject, involvement has been shown to differentiate subjects that invoke limited decision processes from those that invoke cognitively demanding, extended decision processes [21,23–25] and, in doing so, the motivation to adopt or change relevant behaviours [26].

The  $I_3$  framework then creates the opportunity to detect differences associated with different engagements with relevant matters in the roles of attitudes, beliefs, and subjective norms as determinants of behaviour. To the extent that behaviour is undertaken to meet individual needs or the perceived interpersonal expectations of relevant others, this would seem to afford a novel practical, comprehensive, and relevant approach to identifying the causes of differences in behaviour. Specifically, we expect that lower involvement with the policy issue (eliminating COVID-19 from New Zealand) leads to less reasoning about the issue, resulting in subjective norms having a greater influence (and attitude a lesser

influence) on behavioural intentions compared to a situation of higher involvement with the policy issue.

**2. Materials and Methods**

Over the past four years, we have conducted three separate surveys of the public in New Zealand in which we collected data on involvement with and attitudes towards eliminating COVID-19 in New Zealand [16–18]. In those surveys, we also collected data on measures of goal intention and subjective norms regarding eliminating COVID-19 in New Zealand. The first survey [16] collected data from Auckland residents using a commercial internet consumer panel (*n* = 1001). The second survey [17] collected data from residents of five regions (excluding Auckland) who were members of the same commercial internet consumer panel (*n* = 2000). The third survey [18] collected data from residents across New Zealand who were also members of the commercial internet consumer panel (*n* = 1000). Note that, in each survey, panelists receive a reward from the company owning the panel for completing the surveys. See [16–18] for detailed descriptions of the surveys. See also [27] for an insightful analysis of the reliability of self-reports as data on beliefs, attitudes, and intentions.

The questions relating to involvement, attitudes, goal intentions, and subjective norms were identical in the first and second surveys. The third survey was phrased slightly differently because of a change in government policy. In the first and second surveys, the policy outcome was phrased as eliminating COVID-19 from New Zealand. In the third survey, the policy outcome was phrased as preventing the spread of COVID-19 in New Zealand. The data collected in these surveys provided us with three opportunities to test our hypothesis that the relative importance of attitudes and subjective norms varies with involvement.

Involvement arises from needs in relation to matters such as security and comfort (functional involvement); needs in relation to experiences such as enjoyment and excitement (experiential involvement); needs in relation to signaling self-identity in terms of cultural and social values (self-expressive involvement); the risk of making poor decisions (risk involvement); and the magnitude of the potential consequences flowing from making a mistake (consequence involvement). We used a condensed version of the involvement scale (see Table 1) developed by [28] in each survey to assess each respondent’s involvement in eliminating COVID-19 from New Zealand. Respondents’ overall involvement with eliminating COVID-19 (COVIDINV) was measured as their average agreement rating with the statements in Table 1. For all belief, involvement, and evaluative attitudinal statements, respondents were instructed to indicate their agreement with a statement using a five-point rating scale, from strongly disagree (1) to strongly agree (5).

**Table 1.** Involvement scale statements.

Statement
I think helping to eliminate COVID-19 from New Zealand is rewarding
The consequences are serious if we don’t eliminate COVID-19 from New Zealand
Eliminating COVID-19 from New Zealand is something I am passionate about
It would be a big deal if government made mistakes while we try to eliminate COVID-19 from New Zealand
My position on eliminating COVID-19 from New Zealand tells others something about me
Eliminating COVID-19 from New Zealand is important to me
Making decisions about how to eliminate COVID-19 from New Zealand is complicated
What others think about eliminating COVID-19 from New Zealand tells me something about them
I care a lot about eliminating COVID-19 from New Zealand
Making decisions about how to eliminate COVID-19 from New Zealand is difficult

In each survey, we assessed respondents’ attitudes towards eliminating COVID-19 from New Zealand based on their agreement with the statement that ‘Eliminating COVID-19 from New Zealand is the right thing to do’ (ATTCOVID). Respondents’ subjective norms

were assessed based on their agreement with the statement that ‘Nearly everyone I know thinks eliminating COVID-19 from New Zealand is the right thing to do’ (SNCOVID).

In each survey, we measured respondents’ goal intention (GI) as the average agreement rating with the four-goal intention statements in Table 2. Similarly, respondents’ subjective norms in relation to goal intention (SNGI) were measured as their average agreement rating with the four subjective norm statements in Table 2.

**Table 2.** Goal intention and subjective norm statements.

Goal Intention Statement
I feel some responsibility for eliminating COVID-19 from New Zealand
I am prepared to change my normal behaviour to eliminate COVID-19 from New Zealand
It is important to work together to eliminate COVID-19 from New Zealand
I am prepared to make sacrifices to eliminate COVID-19 from New Zealand
Subjective norm for eliminating COVID-19
Nearly everyone I know thinks eliminating COVID-19 from New Zealand is the right thing to do
Subjective norms for goal intention
Most people I know feel some responsibility for eliminating COVID-19 from New Zealand
I think nearly everyone is prepared to change their normal behaviour to eliminate COVID-19 from New Zealand
Most people are prepared to make sacrifices to eliminate COVID-19 from New Zealand
Most people know we must work together to eliminate COVID-19 from New Zealand

Consistent with our interest in the nature of involvement as an intervening variable, respondents in each data set were partitioned into three groups as follows:

- Mild involvement: respondents with involvement scores less than or equal to 3 (since only a very small number of respondents had scores between 1 and 2)
- Moderate involvement: respondents with involvement scores greater than 3 but less than or equal to 4
- High involvement: respondents with involvement scores greater than 4.

We used linear regression analysis to test our hypothesis, estimating separate regressions for each group (in each survey) and comparing the coefficients. That is:

$$GI = b_0 + b_1 \times ATTCOVID + b_2 \times SNCOVID + b_3 \times SNGI$$

We also conducted Chow tests [29] to check that the estimated regressions for each involvement group were statistically significantly different from each other. Statistical analyses were conducted using SPSS 2020 [30].

### 3. Results

The estimated parameters for each of the regressions are reported in Tables 3–5. As hypothesised, for each, the estimated coefficients on attitude increase in magnitude and those on subjective norms decrease in magnitude as involvement increases. Chow tests indicated that, for each survey, the estimated regression for each involvement group is statistically significantly different ( $p < 0.001$ ) from the estimated regressions for the other two involvement groups (see Table 6). Each regression is statistically significant and has a good fit, as indicated by the R-squares, for cross-sectional analyses.

**Table 3.** Estimated regression analyses of goal intention for levels of involvement (Auckland).

	Involvement Score for Eliminating COVID-19		
	Mild (1–3)	Moderate (3–4)	High (4–5)
Intercept	0.27 (0.25)	0.49 *** (0.08)	0.53 *** (0.06)
Attitude towards eliminating COVID-19	0.03 (0.07)	0.24 *** (0.03)	0.32 *** (0.03)
Subjective norm eliminating COVID-19	0.11 (0.07)	0.05 (0.03)	0.08 ** (0.03)
Subjective norm goal intention	0.73 *** (0.09)	0.41 *** (0.04)	0.14 *** (0.03)
Adjusted R <sup>2</sup>	0.56	0.40	0.37
F-test	<0.001	<0.001	<0.001
N	90 (9.0%)	517 (51.8%)	391 (39.2%)

Notes: The dependent variable is goal intention. The values in parentheses are standard errors. \*\* Denotes  $p < 0.01$ , \*\*\* denotes  $p < 0.001$ .

**Table 4.** Estimated regression analyses of goal intention for levels of involvement (MIQ regions).

	Involvement Score for Eliminating COVID-19		
	Mild (1–3)	Moderate (3–4)	High (4–5)
Intercept	0.67 *** (0.14)	1.45 *** (0.10)	2.16 *** (0.14)
Attitude towards eliminating COVID-19	0.10 ** (0.03)	0.26 *** (0.02)	0.33 *** (0.03)
Subjective norm eliminating COVID-19	0.18 *** (0.03)	0.11 *** (0.02)	0.05 * (0.02)
Subjective norm goal intention	0.49 *** (0.05)	0.28 *** (0.03)	0.17 *** (0.02)
Adjusted R <sup>2</sup>	0.52	0.40	0.30
F-test	<0.001	<0.001	<0.001
N	246 (12.3%)	1008 (50.5%)	743 (37.2%)

Notes: The dependent variable is goal intention. The values in parentheses are standard errors. \* Denotes  $p < 0.05$ , \*\* denotes  $p < 0.01$ , \*\*\* denotes  $p < 0.001$ .

**Table 5.** Estimated regression analyses of goal intention for levels of involvement (National).

	Involvement Score for Eliminating COVID-19		
	Mild (1–3)	Moderate (3–4)	High (4–5)
Intercept	0.40 (0.25)	0.74 *** (0.14)	1.53 *** (0.17)
Attitude towards eliminating COVID-19	0.39 *** (0.08)	0.25 *** (0.03)	0.41 *** (0.04)
Subjective norm eliminating COVID-19	−0.13 (0.09)	0.09 *** (0.03)	0.06 * (0.03)
Subjective norm goal intention	0.56 *** (0.11)	0.49 *** (0.04)	0.21 *** (0.04)
Adjusted R <sup>2</sup>	0.58	0.49	0.48
F-test	<0.001	<0.001	<0.001
N	87 (8.7%)	535 (53.6%)	377 (37.7%)

Notes: The dependent variable is goal intention. The values in parentheses are standard errors. \* Denotes  $p < 0.05$ , \*\*\* denotes  $p < 0.001$ .

**Table 6.** Chow test scores.

	Comparison		
	Low vs. Moderate Involvement	Moderate vs. High Involvement	Low vs. High Involvement
Auckland survey	12.80	41.82	52.13
MIQ survey	40.54	53.74	104.29
National survey	11.57	26.09	26.50

Notes: Values are F-test scores. All scores significant at  $p < 0.001$ .

In Table 3, as involvement increases from group to group, the contribution to goal intention of attitude increases and subjective norms reduce, with the norm relating to personal goal intention being more significant and powerful than that relating to the general issue of COVID-19 elimination.

In Table 4, the results are similar to those in Table 3, with somewhat more significant results for the subjective norm related to COVID-19 elimination. This likely reflects the greater awareness and contemplation of COVID-19 in the areas hosting managed isolation and quarantine facilities (MIQ regions).

Table 5 contains broadly similar results, with the exception that the subjective norm regarding elimination resembles Table 3 more than Table 4, and the attitude variable coefficient appears very high in this study for Mild Involvement respondents.

For comparison, we report two sets of regression results using the entire sample in each survey. One set of results is simply an estimate of the parameters in Equation (1) above using the entire sample (see Table 7). For each survey, the differences between the estimated parameters for the sub-sets of the sample and the estimated parameters for the entire sample are considerable (as indicated by the results for the Chow tests).

**Table 7.** Estimated regression analyses of goal intention (Entire sample).

	Auckland	MIQ	National
Intercept	0.97 *** (0.09)	0.67 *** (0.06)	0.42 *** (0.08)
Attitude towards eliminating COVID-19	0.33 *** (0.02)	0.32 *** (0.01)	0.39 *** (0.02)
Subjective norm eliminating COVID-19	0.09 *** (0.02)	0.16 *** (0.01)	0.06 *** (0.02)
Subjective norm goal intention	0.39 *** (0.03)	0.37 *** (0.02)	0.46 *** (0.03)
Adjusted R <sup>2</sup>	0.60	0.67	0.68
F-test	<0.001	<0.001	<0.001
N	1000	2000	1001

Notes: The dependent variable is goal intention. The values in parentheses are standard errors. \*\*\* Denotes  $p < 0.001$ .

The second set of results is an estimate of the parameters in equation (1) above using the entire sample but with the respondents' involvement in eliminating COVID-19 (COVIDINV) as an additional explanatory variable (see Table 8). The influence of involvement on the formation of goal intentions when the samples are partitioned, compared to the influence when involvement is treated as an explanatory variable, is, again, marked. While the role of involvement in explaining goal intention is significant and positive, as reported by Ajzen et al. [9], the role of involvement in moderating the relative importance of attitudes and subjective norms in determining goal intention is not apparent in the latter specification.

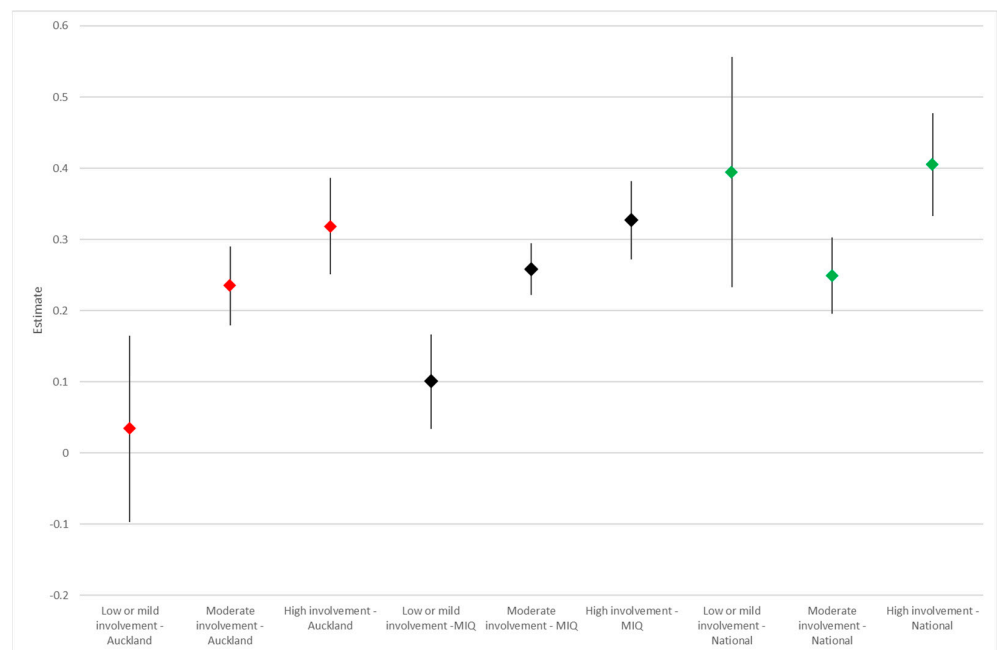
**Table 8.** Estimated regression analyses of goal intention with involvement as one independent variable (Entire sample).

	Auckland	MIQ	National
Intercept	0.32 *** (0.09)	0.16 *** (0.05)	-0.02 (0.09)
Attitude towards eliminating COVID-19	0.21 *** (0.02)	0.21 *** (0.01)	0.29 *** (0.02)
Subjective norm eliminating COVID-19	0.05 *** (0.02)	0.10 *** (0.01)	0.04 (0.02)
Subjective norm goal intention	0.29 *** (0.03)	0.23 *** (0.02)	0.37 *** (0.03)
Involvement with eliminating COVID-19	0.42 *** (0.03)	0.46 *** (0.02)	0.34 *** (0.03)
Adjusted R <sup>2</sup>	0.67	0.73	0.72
F-test	<0.001	<0.001	<0.001
N	1000	2000	1001

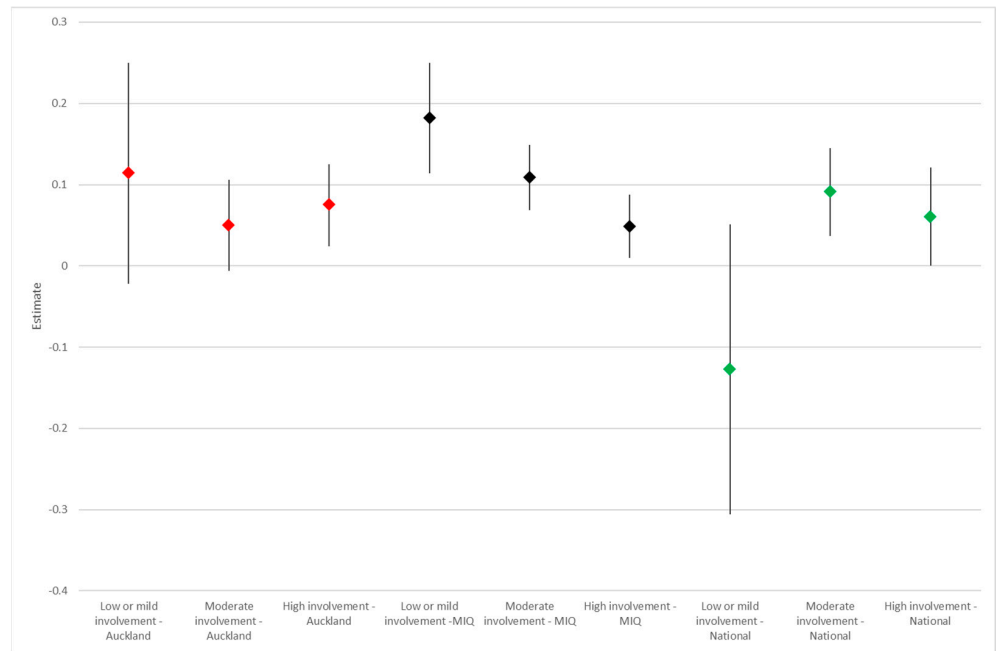
The values in parentheses are standard errors. \*\*\* Denotes  $p < 0.001$ .

The otherwise very impressive results in Table 8 mask major relevant diversity across full-sample analyses in the roles of attitudes and subjective norms in explaining goal intentions, as revealed in all three individual studies when the intervening role of involvement is modelled appropriately. This diversity is of profound importance for the purpose of identifying effective means of influencing behaviour change because involvement is so closely related to engagement with information.

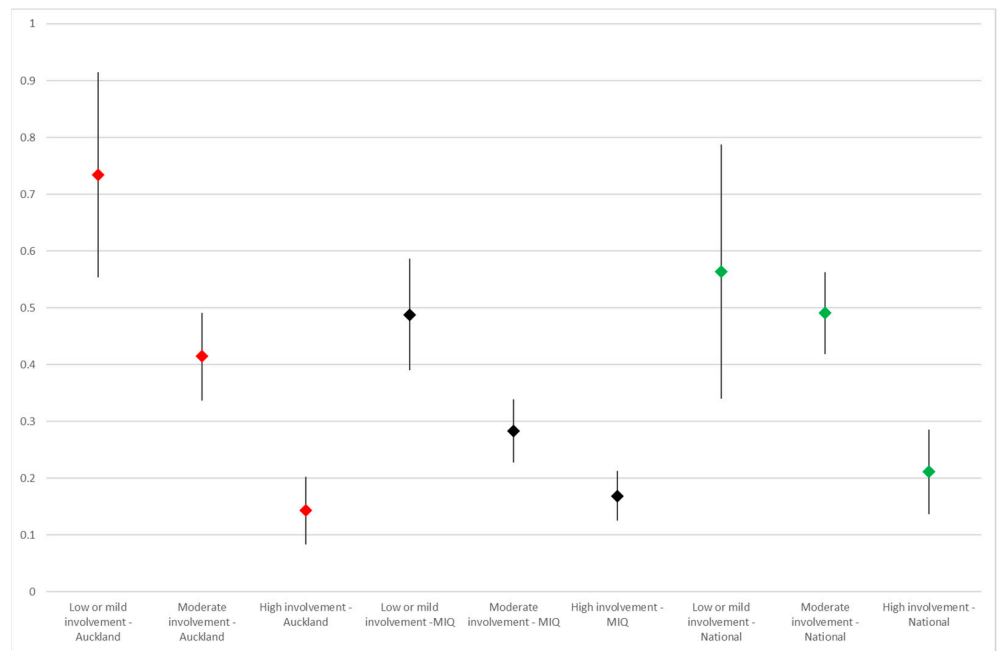
In Figures 1–3, the confidence intervals for the attitude and subjective norm parameters are graphed and confirm the increasingly greater weight of attitude relative to subjective norm as involvement increases. This makes clear, we suggest, the confounding of results that may result from analysis that treats involvement as one of a set of plausible explanatory variables rather than as an intervening variable that plays an important role in defining samples independent of those other explanatory variables.



**Figure 1.** Coefficient estimates for influence of attitude regarding eliminating COVID-19.



**Figure 2.** Coefficient estimates for influence of subjective norms regarding eliminating COVID-19.



**Figure 3.** Coefficient estimates for influence of subjective norms regarding goal intention.

**4. Discussion**

The regression analyses supported our hypothesis that the relative influence on behavioural intentions of attitudes and social norms regarding a subject varies depending on involvement, that is, the importance of a subject to the individual. This is consistent with the reasoning in [9] that personal beliefs, and therefore attitudes, determine behaviour unless social identity defines self, and that group norms influence behaviour when self-relevant uncertainty is present, and behaviour (e.g., wearing face masks in public) is observable to relevant others, which, in the context of COVID-19, is everyone. Our findings imply that the notion that involvement can be treated as one of a set of explanatory variables, as reported in Ajzen et al. [9], may lead to misspecification; that involvement is causally



related to information use and cognitive effort in the process of the formation of explicit attitudes and norms (and quite possibly implicit attitudes—see [9]).

Our findings are consistent with the idea that respondents with low, mild, or moderate involvement with eliminating COVID-19 from New Zealand (preventing its spread) are less motivated to invest cognitive effort in reasoning about and forming an attitude towards the goal of eliminating COVID-19 from New Zealand. This leads to a heavier reliance on subjective norms (what they believe relevant others think) when these respondents form behavioural intentions compared to respondents who have a high level of involvement with the idea of eliminating COVID-19 from New Zealand.

These findings have some important implications. First, they suggest that promotional efforts that rely on peer group messages to persuade respondents to adopt behaviours designed to eliminate or prevent the spread of COVID-19 are likely to be most effective among respondents who have low-to-mild involvement with the subject and least effective among respondents who have high involvement with the subject. Ensuring the correct peer groups are selected to deliver these messages is obviously critical to their success, which means that understanding how respondents with low involvement formulate their subjective norms is of fundamental importance. For example, respondents who have low involvement with eliminating COVID-19 may rely on group norms that are therapeutically irrelevant but relevant to their identity, such as their political affiliation, to formulate their subjective norms and set their behavioural intentions accordingly (see [13,31]). In these circumstances, promotional efforts seeking to change respondents' attitudes about COVID-19 are unlikely to be successful. Promotional efforts using well-known representatives with the appropriate political affiliation to express the desired behavioural norms may, by changing respondents' subjective norms, be more effective in changing behaviour.

The effect of promotion in these circumstances may be asymmetrical. The more inconvenient the preventative behaviour, the less influential will be promotion based on subjective norms that encourage the behaviour, and the more influential will be promotion based on subjective norms that discourage the behaviour.

Promotional efforts designed to reinforce or change subjective norms are less likely to have much effect on respondents who have a high level of involvement with the subject of eliminating COVID-19. These respondents are more likely to be influenced by promotional messages that seek to reinforce or alter their attitude towards eliminating COVID-19 by confirming or countering their beliefs about it.

The second implication derives from the fact that respondents who have low involvement in a subject are less likely than respondents who have high involvement to notice and evaluate promotional messages. This raises the problem that those whose behavioural intentions might be most influenced by their subjective norms are also likely to be the least likely to notice and contemplate promotional messages concerning them. Furthermore, respondents who have low involvement in a subject are, *ceteris paribus*, the least likely to change their behaviour if the change entails effort. This means that, even if subjective norms about eliminating COVID-19 can be modified by promotion to align with a desirable behaviour such as wearing face masks in public, the extent to which the change in subjective norms triggers a change in behaviour depends heavily on the convenience with which the behavioural change can be implemented (e.g., free provision of face masks in public places). These considerations lead to the unfortunate conclusion that efforts to promote the adoption of preventative measures like the wearing of face masks, social distancing, and testing that rely on changing subjective norms are only likely to influence those who are least likely to notice them and who are the least motivated to change their behaviour.

Third, the application of theories that explain or predict behaviour based on attitudes and subjective norms [5–7] could arguably be systematically improved by incorporating concepts (such as involvement) that reflect the effect that the personal importance of a subject may have on cognitive effort and decision-making in relation to the subject. Differences in the personal importance of a subject may mean that estimates of the marginal impact of changes in attitudes and subjective norms on behavioural intentions may be

substantially under- or over-estimated for large proportions of respondents in a sample, resulting in inappropriate promotional strategies being inferred. This is especially true if differences in the personal importance of a subject invoke different decision styles or heuristics [32–34]. Furthermore, differences in the personal importance of various subjects (arising perhaps from differences in sampling strategies) may help explain variations among studies in the relative importance of attitudes and subjective norms in predicting behavioural intentions (see [35]).

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**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** The dataset analysed during the current study is available at <https://osf.io/yag3z> (accessed on 9 January 2024).

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