

Article

Antecedents of Booster Vaccine Intention for Domestic and International Travel

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Abstract: Herd immunity through vaccination has been a major technique for long-term COVID-19 infection management, with significant consequences for travel willingness and the recovery of the hospitality and tourism industries. However, indications that vaccine-induced immunity declines over time imply the need for booster vaccines. This could minimize the perceived health hazards of travel while enhancing travel propensity. This study integrated the theory of basic human values, the norm activation model, and the theory of planned behavior to investigate the role of cognitive aspects of individuals' booster vaccine intention on domestic and international travel intention. More importantly, the study examined the role of value in activating moral responsibility and individuals' beliefs to take the booster vaccine before traveling. A total of 315 Korean samples were collected to test the proposed conceptual model using structural equation modeling. In general, the results supported the proposed hypotheses. Notably, the intention to take the booster vaccine has a substantial impact on the intention to travel internationally. Furthermore, the communal values accept benevolence have an influence on personal morals and beliefs about receiving booster vaccines before international traveling.

Keywords: COVID-19 booster vaccine; domestic travel; international travel; theory of basic human values; norm activation model; theory of planned behavior



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1. Introduction

Risk factors associated with health crises, such as COVID-19, can physically hurt people and, as a result, have a big impact on people's intentions to travel [1]. Ever since the COVID-19 pandemic's emergence, demand for domestic and international travel has substantially decreased all around the world due to border closures, stay-at-home directives, and extraordinary shutdowns [2], and South Korea has been no exception; in South Korea, the inbound tourist percentage in 2020 dropped down 84 percent for the year, and tourist revenue was down 68.5 percent for the month compared with pre-COVID-19 pandemic [3]. In light of developing secure and efficient vaccines against COVID-19, South Korea has reopened the country's borders to inbound and outbound visitors in early 2022 so tourists can resume travel activity with some limitations and requirements [4].

However, there were concerns that people's levels of vaccine-elicited antibodies might decrease once their first COVID-19 vaccination series was complete [5,6]. The breakout of the Delta and Omicron strains revealed significant vaccination protection fading [7]. Therefore, it was advised to have an extra dose of the COVID-19 vaccine as a booster. A COVID-19 booster vaccine is administered to individuals who have finished their initial vaccination regimen [8]. There has been strong proof that giving a healthy adult a booster dose of mRNA, adenovirus vector, or inactivated COVID-19 vaccination can greatly improve humoral immune response, particularly antigens that neutralize the exotic diseases and troublesome variations [6,9].

As of 21 March 2023, there have been 761,071,826 confirmed cases of COVID-19 globally, including 6,879,677 deaths. The COVID-19 pandemic has led the world to undertake the largest vaccination campaign in human history. As of 20 March 2023, a total of 13,260,401,200 vaccine doses have been administered [10].

Although the affordability of booster doses of COVID-19 vaccines and the accessibility of immunization services are crucial, without individuals' intentions to take booster doses, herd immunity by vaccination will not be continued. Thus, understanding the aspects that underline people's intention to take the booster of the COVID-19 vaccine is critical for achieving herd immunity which is more likely to have a big impact on people's desire to travel and the resurgence of the hospitality and tourism sector [2].

The perceived health hazards associated with travel might be reduced by increasing the level of booster shots, which would also enhance travel intentions. Individual ideas, attitudes, and intentions are influenced by values, which are the social manifestation of deeply ingrained core motives [11]. Since younger people are not as vulnerable to SARS-CoV-2 and its variances as the elderly, getting a booster dose of the COVID-19 vaccine can be viewed as an act of "voluntary action, intended to help another" [12], in other words, a prosocial act. As a result, communal values have an impact on prosocial behavior. It also happens more frequently in the setting of close relationships and is significantly tied to sentiments of empathy [13]. Human values are an alternative technique to forecasting prosocial behavior. Then, values may activate individuals' understanding that their actions might have consequences for the welfare of others (awareness of consequences), thereby increasing their responsibility for reaching herd immunity (ascription of responsibility) [14]. Furthermore, understanding the importance of herd immunity may affect individuals' beliefs about the COVID-19 vaccine and their role in reaching herd immunity by vaccination. Thus, it is conceivable that their belief may subsequently increase their intention to have the COVID-19 vaccine, thereby affecting their travel decisions domestically and internationally.

The recent pool of research related to the booster COVID-19 vaccine has generally concentrated on the intention to receive the booster shots and the barriers, facilitations, and factors that affected the up taking of boosters [15,16]. For COVID-19 booster hesitancy [17,18], the attitude toward COVID-19 booster vaccines [19], only a few researchers have studied the effect of booster doses on the intention of the travel industry [20]. For instance, in their study with chosen Chinese individuals, Zhu and Deng (2020) evaluated risk knowledge, perceived risk, risk aversion attitudes, and intention to travel to rural areas [21]. Additionally, in South Korea, "untact" tourism behavior was examined by Bae and Chang (2021) in relation to the influence of COVID-19 risk perception. Yet, several studies have found disparate findings regarding cognitive-behavioral control aspects [22], indicating the need for additional research. Therefore, the present study has been dedicated to investigating the cognitive factors associated with individuals' intention to take the booster dose of the COVID-19 vaccine for travel purposes by merging the theory of basic human values, theory of planned behavior (TPB), and norm activation model (NAM).

Hence, the primary objective of the current study was to close a knowledge gap on how COVID-19 booster vaccination intent affects both domestic and international travel intention by addressing the three objectives listed below. The first step is to determine relevant factors that explain how communal values influence individuals' awareness of herd immunity consequences. The second goal is to improve the study model's explanatory power by combining the NAM and the TPB to better understand the determinants that influence people's decisions to receive the booster COVID-19 vaccine for travel purposes. The third step is to validate the proposed research model among Korean adults. During the data collection process, the booster dose vaccination rate among young adults in Korea was relatively low, and travel decisions were heavily influenced by the vaccination rate. We anticipated that our model would add empirical evidence for behavioral interventions aimed at increasing booster vaccine intentions for domestic and international travel purposes.

The study findings would not only contribute to a better understanding of travelers' intentions both domestically and abroad amid crises but would also give a deep under-

standing of cognitive elements that influence the tourists' decisions to take the COVID-19 booster vaccine for travel purposes. Given that COVID-19 is an endemic disease, strategies that address these issues could be a crucial component of an effective endemic disease management plan for the current endemic and any future crises, which, in turn, could aid in the rapid recovery of the tourism industry.

2. Literature Review

2.1. Values

Values have been generally explained as the guiding principles for what is significant or desirable to people in a range of contexts, and they influence motivation, cognition, and conduct [23]. Schwartz (2003) identifies ten core personal values (power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security) (see Table 1 for value definitions). These values have been categorized based on their significance in communion and agency [23,24]. Communal values are concerned with the wellbeing of others and the maintenance of harmonious relationships with others (universalism, benevolence, tradition, conformity, and security), whereas agentic values are concerned with advancing one's social standing (power, achievement, hedonism, stimulation, and self-direction) [25]. The four basic categories of self-transcendence, self-enhancement, conservation, and openness to change are also used to further categorize values.

Table 1. Description of Schwartz Values.

Tendency	Type	Description
Self-transcendence ~ Conservation	Benevolence	Benevolence values, such as being helpful, truthful, forgiving, loyal, and responsible, are concerned with enhancing and defending the wellbeing of close peers.
	Tradition	The respect and dedication of a person to his or her culture, religion, and traditions is shown in traditional values, such as modesty and the emphasis on tradition and moderation.
	Conformity	Obedience, agreement, self-control, and deference to elders are all examples of conformity values, which refer to the restraint of behaviors and tendencies that could damage others and transgress societal norms.
Conservation ~ Self enhancement	Security	Social interactions and ensuring an individual's safety are tied to security values, such as family safety, national security, social order, cleanliness, and reciprocity.
	Power	Social interactions and ensuring an individual's safety are tied to security values, such as family safety, national security, social order, cleanliness, and reciprocity.
Self-enhancement ~Open To Change	Achievement	Success, competence, ambition, and influence are examples of achievement values that primarily focus on an individual's accomplishment in terms of social standards.
	Hedonism	Values associated with hedonism, such as enjoyment and loving life are connected to the sensual gratification felt by a person after attaining their goals.
	Stimulation	The excitement, novelty, and challenges that a person experiences during his or her life are referred to as stimulation values, such as varied and exciting lives.
Open to Change ~ Self-transcendence	Self-direction	The independence of an individual to decide on his or her actions and choices based on his or her creativity and exploration is referred to as self-direction. Self-direction ideals include creativity, freedom, independence, curiosity, and choosing one's own goals.
	Universalism	Values associated with universalism, such as enlightenment, and morality. Justice, world peace, a sense of beauty in the world, harmony with nature, and environmental protection all allude to one's responsibility to comprehend, assess, and safeguard the welfare of all living things.

Values can change as a consequence of opportunities, complexities, and stressful events that reflect what an individual perceives as desirable and valuable [26,27]. Values shifts have been observed following large existential threats, such as the 2008 financial crisis [26], war exposure [27], and the 9/11 terror attacks [28], particularly in the conservation versus openness to change component. In each of these circumstances, security values grew in prominence while traditional values increased. In contrast, motivationally opposed values, such as self-direction, excitement, and hedonism decreased [29].

Moreover, previous studies have found the elevation of altruistic value relevance in a serious situation, especially increases in self transcendence over the self enhancement dimension [29]. As a result, the specific threats that people face during disease outbreaks, such as COVID-19, may influence their values, and such diseases are anticipated to elicit communal behavioral responses that limit disease propagation by stimulating behavioral aversion techniques consistent with conservation value [26]. Such stimulation decreases social interaction, curiosity about novel perspectives, and self-directed thinking and behavior [30]. Likewise, the imminent threat of the epidemic is likely to boost the importance of mortality, which has been found to raise self-transcendence values [29,30]. From the above discussion, this study has focused on the importance of conservation and self-transcendence values during the COVID-19 outbreak as these values may guide other behavioral responses to the COVID-19 outbreak.

2.2. Awareness of Consequences and Values

Herd immunity is achieved through vaccination, and it has been a crucial technique for long-term COVID-19 infection treatment. However, indications that immunization resistance fades over time suggest that additional efforts are needed to maintain immunization rates. Therefore, governments have approved the injection of booster vaccine doses to maintain immunization levels [31]. However, the acceptance of booster vaccines and their implications has been slow due to a lack of understanding among individuals about their role in containing the ongoing waves of infection [32]. Individuals' awareness of the consequences of herd immunity through vaccination is related to their mindfulness of negative consequences when not performing pro-socially for others, which is rooted in their values [31].

Within the framework of COVID-19, vaccination is a pro-social behavior since it secures not only oneself but also one's personal surrounding structure. This seems to be particularly relevant for younger people, who are at lower risk of developing serious diseases. Given the inextricable relationship between communal values and prosocial conduct [33], it is plausible to argue that communal values influence vaccination intentions. This rationale has been supported empirically by evidence on the association between commonality and the readiness to self-isolate to protect others in the event of a pandemic supports. For instance, Wolf and his colleagues discovered that values, such as benevolence are crucial in promoting prosocial pandemic-related behavior (e.g., social distancing) [34]. Furthermore, it appears that communal personality traits are associated with higher compliance behavior [35]. In addition, Martcheva's data analysis suggested that "prosocial awareness has the competitive potential to flatten the curve" [36].

In conclusion, these studies indicated that communal values have significant impacts on an individual's understanding of the consequences of taking booster vaccines, which is important so that the person can recognize that others need help and that their ability to engage pro-socially by taking the booster vaccine can help others and protect fellow humans. The following hypotheses are based on these discussions:

Hypothesis 1a (H1a). *Awareness of consequences is positively influenced by universalism.*

Hypothesis 1b (H1b). *Awareness of consequences is positively influenced by benevolence.*

Hypothesis 1c (H1c). *Awareness of consequences is positively influenced by conformity.*

Hypothesis 1d (H1d). *Awareness of consequences is positively influenced by tradition.*

Hypothesis 1e (H1e). *Awareness of consequences is positively influenced by security.*

2.3. Norm Activation Model (NAM) and Booster Vaccine Intention

The foundation of the NAM, developed by Schwartz in 1977, is the notion that moral standards guide people's beliefs and actions. Three factors are included in the NAM that help to explain behavior: personal norms, ascribed responsibility, and awareness of consequences [37]. People may become aware of their capacity to assist others if they comprehend the repercussions of not acting pro-socially. Affirming sentiments of accountability for the unfavorable effects of pro-social conduct is referred to as an ascription of responsibility [37]. As a result, in order to get involved and offer support, people must take some accountability for the current problem. Personal norm refers to a duty coming from decisions to engage in or refrain from particular behaviors [38].

In the fields of tourism and hospitality, it has been empirically demonstrated that awareness of consequences, ascribed responsibility, and personal norms are crucial for understanding traveler pro-social behaviors [39]. The young travelers' intention to behave ecologically friendly [40], Green lodging visitors' environmentally conscious behavior [41], as well as environmentally conscious travelers [42] have all corroborated the beneficial influence of awareness of consequences on ascribed responsibility. In addition, Kim and Hwang (2020) confirmed that ascribed responsibility had a favorable impact on personal norms in their study on drone-delivered meals [43]. In addition, the ascribed responsibility strongly predicted that tourists who visited national parks would have pro-environmental personal norms [44]. Furthermore, Liu and Jang (2020) contended that civilized tourists are the foundation of the competitiveness of tourism destinations and that they significantly influence the intentions of civilized behavior [45]. Furthermore, personal norms were used to predict the environmental factors of smart tourism [46]. Awareness of the COVID-19 pandemic's health consequences has also been shown to have a positive effect on an individual's ascribed responsibility to adopt pro-social behaviors that activate a personal norm toward pro-mandatory vaccination-friendly behavior [47]. As a result, individuals' understanding of the consequences of continued herd immunity must be robust and meaningful for the person to recognize that others require assistance and that their ability to engage pro-socially and take the booster vaccine before traveling could benefit others. We offered the following hypothesis based on the evaluation of existing studies and relevant research evidence:

Hypothesis 2 (H2). *Ascribed responsibility is positively influenced by awareness of consequences.*

Hypothesis 3 (H3). *Personal norm is positively influenced by ascribed responsibility.*

Hypothesis 4 (H4). *Personal norm positively affects booster vaccination intention.*

2.4. Theory of Planned Behavior and Booster Vaccine Intention

The TPB is a model for anticipating and explaining human behavior in certain situations [48]. TPB asserts that perceived behavioral control, subjective norms, and attitudes are significant preconditions of behavioral intention, which is a close predictor of conduct [48,49]. This model has been shown to accurately predict a range of health-related behaviors, including intentions to undergo genetic testing [50], H1N1 vaccine uptake among students [51], and parental vaccination decision-making for children [52], and the actual COVID-19 vaccine uptake [53].

While perceived behavior control refers to people's perceptions of the ease or difficulty of doing or engaging in certain activities, attitude relates to a person's positive or negative judgment of the conduct. Subjective norm, however, refers to anticipated pressure to perform or engage in a behavior. According to the TPB investigations, vaccination intentions

against SARS-CoV-2 are positively correlated with a good attitude toward vaccination as well as with perceived norms in favor of vaccination among friends and family [54], clinicians [55], and with high perceived behavioral control [56].

Given that the NAM asserts that moral obligations are prompted by awareness of the issue that influences personal norms, and the TPB asserts that attitudes, subjective norms, and perceived behavioral control influence health behavior [57]. The two theories are combined on the assumption that one's morality and sense of reason determine one's behavior regarding booster vaccinations, taking into consideration the fact that vaccination is intended as a healthy activity to protect both the individual and others [58].

In regard to the COVID-19 booster shot, individuals are more inclined to have a positive attitude toward pro-social conduct when it comes to booster immunizations since they are aware of the impact of not engaging in or carrying out such activities. The identification of behavior performance and the inherent benefits provided by such desired behavior performance [54] is the cornerstone for the development of a positive attitude. Such individual traits are probably going to have a big impact on other people in the same social group or social network (i.e., subjective norm); such activity is likely to encourage pro-social behavior due to its contagious imitative effect [59], proving that a higher level of consequence awareness results in a higher subjective norm and, as a result, a more positive attitude toward pro-social behavior. Similar to the previous example, the contagious effects of receiving the booster shot may impact how easy or difficult an action feels to the individual by improving or altering how they engage in the same behavior. Therefore, people's perceptions of behavioral control, subjective norms, and attitudes regarding the COVID-19 booster vaccine could be used as a conduit to justify performing the behavior of taking the booster shot. We speculated on the following assumptions in light of the discussion above:

Hypothesis 5a (H5a). *Awareness of consequences positively influences vaccine attitude.*

Hypothesis 5b (H5b). *Awareness of consequences positively influences the subjective norms.*

Hypothesis 5c (H5c). *Awareness of consequences positively influences the perceived behavioral control.*

Hypothesis 6a (H6a). *Vaccine attitude has a positive impact on booster vaccine intention.*

Hypothesis 6b (H6b). *Subjective norms have a positive impact on booster vaccine intention.*

Hypothesis 6c (H6c). *Perceived behavioral control has a positive impact on booster vaccine intention.*

2.5. Booster Vaccine Intention and Domestic/International Travel Intention

The intention has been defined as a person's proclivity to engage in a specific behavior [60]. Travel intention is defined as the probability and engagement towards the notion of traveling, and it is influenced by a variety of circumstances [61]. The cognitive elements that influenced people's intention to receive booster COVID-19 vaccine for international and democratic travel are the topic of this study.

Previous research on vaccine-preventable diseases other than COVID-19 found that pro-social incentives, as well as beliefs regarding the risk and disease severity, influence vaccination [62–64]. For instance, Li et al. (2016)'s study investigated how pro-social incentives affected college students' intentions to get their flu shots. The researchers discovered that students were more likely to report vaccination intentions when they heard communications highlighting the pro-social benefits of vaccination (i.e., safeguarding vulnerable groups) than when they heard messages emphasizing the personal advantages of vaccination (i.e., protecting oneself) [62]. Additionally, Brewer and his colleagues (2007) conducted a meta-analysis that used vaccination as an example to evaluate the connection between risk perception and health behavior. According to the authors, people's opinions

about the likelihood and seriousness of contracting the disease can affect whether or not they choose to get vaccinated [63].

In addition, studies on the factors influencing vaccination acceptability for diseases that can be prevented by vaccination (such as malaria, yellow fever, Japanese encephalitis, and others) indicated that comparable factors influence the decision to get vaccinated while traveling to endemic areas [65].

These findings are consistent with studies looking at COVID-19 travel vaccination variables. For instance, Ekinci and his colleagues discovered that a person's attitude regarding COVID-19 immunizations has a bigger impact on their intention to get the vaccine as opposed to how much they wish to travel [66]. Additionally, the best predictor of the desire to vaccinate for travel-related reasons was found to be vaccination status and opinions regarding the efficiency of the COVID-19 vaccine [61]. Therefore, vaccinated people who think vaccines are safe and effective are likely to have another booster shot if it allows them to travel.

COVID-19 immunization certificates for travel [67] have been suggested as a method to revive tourism during the endemic development of COVID-19. Before-travel immunization boosters become necessary due to the COVID-19 vaccines' temporary protective effect. Several nations, particularly South Korea, have made immunization boosters a requirement for travel [68]. Recently, all travel restrictions have been lifted for those who had their booster shots; however, these limitations may also influence a person's desire to travel by encouraging them to take the necessary precautions (such as receiving extra vaccinations) to ensure their safety. As a result, it has already been shown that immunization and the intention to travel go hand in hand. From the above discussion, we can expect that intention for domestic and international travel will be affected by booster vaccination intention. Figure 1 depicts the interactions between variables used in this study.

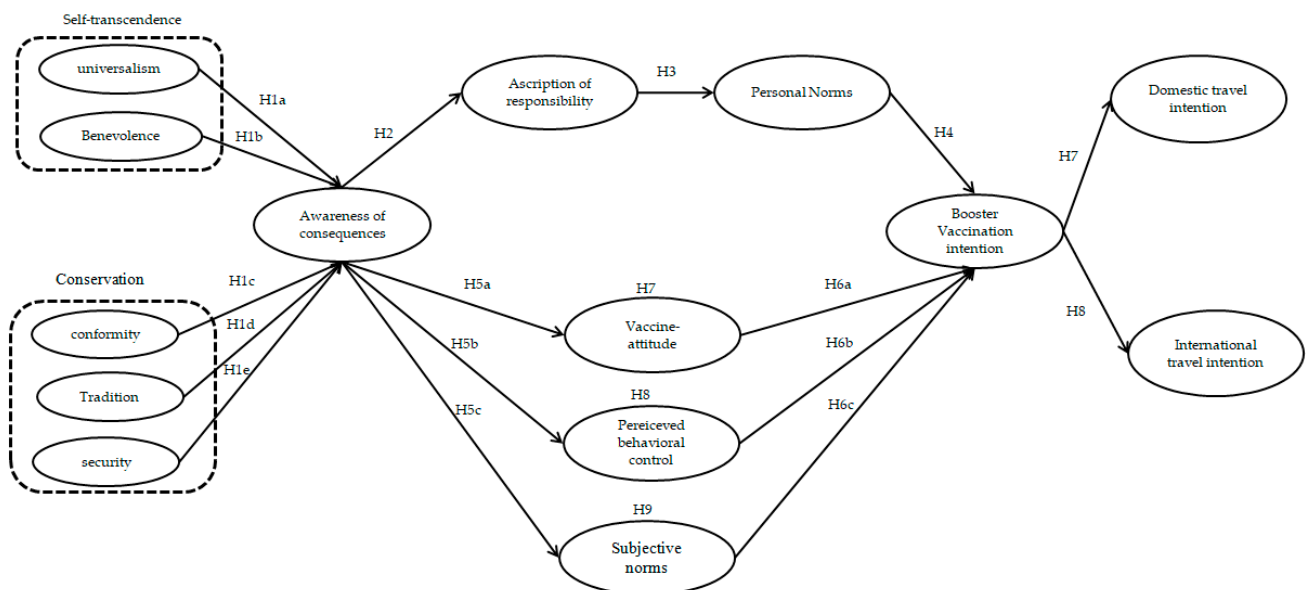


Figure 1. Proposed conceptual model.

Hypothesis 7 (H7). *Booster vaccine intention impacts domestic travel intention positively.*

Hypothesis 8 (H8). *Booster vaccine intention impacts international travel intention positively.*

3. Methods

3.1. Measurement Items and Survey Design

A deductive strategy was applied in this study, which used quantitative and survey approaches. The reflective measures for the components were derived from previous research and used a seven-point Likert scale. A total of 49 items were used to assess

all 14 components. At the same time, Choi and Heo's assessment items were used to evaluate personal values [69]. Han's measurement items were used to evaluate TPB factors connected to COVID-19 immunization [42]. The NAM structures were also measured using Kiatkawsin's items [46]. In addition, the researchers used measures that had previously been validated in previous studies for both domestic and foreign travel intention [61]. The adopted items were then tweaked to better fit the context of this study, and the demographic questions were added to the survey's final part. To satisfy the study's sample (Korean adults who had received the first and second doses of COVID-19 vaccination), the survey was conducted in English and translated into Korean by a native multilingual speaker of both languages. The translation's accuracy was pre-tested by academic specialists and tested among Korean speakers to ensure a general understanding of the Korean version (See Appendix A).

3.2. Sampling and Data Collection

Koreans who had already received their first and second doses of COVID-19 immunization were the target population. The poll was distributed to the panel of a major research company in Korea using a convenience sample technique. The data were collected in the mid of March 2022. The period was chosen deliberately because it was expected that travel restrictions on air, train, road, as well as international travel, would be eased for those who'd already received a COVID-19 booster dosage. There were 330 completed questionnaires in total, with the remaining 315 instances kept after data screening.

Table 2 illustrates the respondents' demographic and socioeconomic characteristics. Females outnumbered males marginally, and the average age of the participants was 28.46. The majority of respondents in the sample had a Bachelor's degree, were unmarried, and lived in Seoul with two other people (see Table 2).

Table 2. Demographic information.

Variable	Category	Distribution	Valid Percentage
Gender	Male	145	45.7
	Female	170	54.3
Age	Mean	31.46	
	Seoul	122	37.9
Area of residential	Gyeonggi-do	110	35.4
	others	83	26.4
Marital Status	Single	212	66.7
	Married	103	33.3
Educational Background	High school or below	85	25.8
	Bachelor's degree	205	60.4
	Master's degree	15	8.7
	Doctorate	10	5.1
Have you completed your COVID-19 vaccine does?	Yes	287	90.7
	No	28	9.3
living companions	Alone	100	30.5
	1 other person	48	16.2
	2 other people	126	40
	More than 2	41	13.3

4. Results

4.1. Confirmatory Factor Analysis

The first step of the two-step method suggested by Anderson and Gerbing was testing the measurement model's goodness of fit [70]. Data screening was conducted before CFA to look for potential violations of fundamental presumptions. The skewness ratings ranged from -0.758 to 0.762 . The ratings for kurtosis ranged from -0.822 to 0.795 . Hence, outliers were not found, and there was no breach of data normality.

Maximum likelihood factoring was employed for the CFA, and the outcomes indicated a satisfactory model fit ($\chi^2 = 1866.111$, $df = 769$, $p < 0.01$, $\chi^2/df = 2.427$, RMSEA = 0.052,

CFI = 0.953, IFI = 0.953). All results indicated that the measurement model was accepted. A composite reliability (CR) test was carried out to evaluate the internal consistency, according to Hair [71]. Results ranged from 0.755 to 0.875, and all but conformity CR scores of 0.692 were higher than the generally accepted minimum level of 0.70. Construct validity was evaluated, and the results demonstrate that convergence validity was found with average variance extracted (AVE) scores ranging from 0.534 to 0.920 points greater than the required minimum of 0.5 [71]. Finally, AVE values show discriminant validity because they were all higher than the correlation between the two constructs (see Table 3).

Table 3. Summary of the confirmatory factor analysis results.

	CON	TRAD	SEC	UNIVR	BENEV	AC	AR	PN	AV	PBC	SN	BVI	DT	IT
CON	0.731 ^b													
TRAD	0.711 ^a	0.808												
SEC	0.560	0.395	0.904											
UNIVR	0.553	0.466	0.508	0.901										
BENEV	0.641	0.679	0.504	0.622	0.902									
AC	0.387	0.229	0.328	0.349	0.297	0.889								
AR	0.416	0.289	0.236	0.305	0.269	0.305	0.849							
PN	0.450	0.231	0.396	0.418	0.340	0.802	0.465	0.876						
AV	0.383	0.238	0.338	0.428	0.302	0.702	0.415	0.797	0.909					
PBC	0.428	0.302	0.309	0.418	0.351	0.512	0.396	0.629	0.723	0.741				
SN	0.423	0.294	0.407	0.393	0.381	0.632	0.347	0.763	0.730	0.683	0.909			
BVI	0.415	0.159	0.340	0.395	0.317	0.650	0.380	0.831	0.763	0.682	0.763	0.959		
DT	0.124	0.165	0.010	0.122	0.207	0.035	−0.010	−0.028	0.118	0.118	0.044	0.015	0.913	
IT	0.337	0.289	0.256	0.287	0.254	0.430	0.141	0.440	0.526	0.387	0.437	0.430	0.348	0.916
AVE	0.534	0.653	0.818	0.812	0.814	0.790	0.721	0.767	0.826	0.549	0.826	0.920	0.834	0.839
CR	0.692	0.788	0.899	0.896	0.897	0.919	0.883	0.929	0.966	0.772	0.950	0.972	0.952	0.940

Note 1. Goodness-of-fit statistics: $\chi^2 = 1866.111$, $df = 769$, $p < 0.01$, $\chi^2/df = 2.427$, RMSEA = 0.052, CFI = 0.953, IFI = 0.953. Note 2. CON = Conformity, TRAD = Tradition, SEC = Security, UNIVR = Universalism, BENEV = Benevolence, AC = Awareness of consequences of herd immunity, AR = Ascription of responsibility, PN = Personal norms, AV = Attitude towards COVID-19 booster vaccine, PBC = Perceived behavioural control, SN = Subjective norms, BVI = Booster vaccine intention, DT = Domestic travel intention, and IT = International travel intention. ^a Correlations. ^b Squared root of AVE.

4.2. Structural Equation Modeling

The structural model suggested by this study was tested in stage two of Anderson and Gerbing's two-stage methodology [70], and the results of the SEM analysis indicated acceptable goodness-of-fit statistics according to the proposed indices by Hair et al. (2014) ($\chi^2 = 2441.392$, $df = 817$, $\chi^2/df = 2.988$, RMSEA = 0.061, CFI = 0.931, IFI = 0.931, TLI = 0.923, NFI = 0.900, PCFI = 0.842). The relationships between each component were subsequently tested. Table 4 provides a summary of the outcomes, which showed that all but two of the proposed hypotheses were confirmed. More specifically, it was discovered that awareness of the consequences of herd immunity was highly correlated with all personal values except benevolence. However, the effect of tradition on the awareness of consequences turned out to be negative. As a result, hypotheses 1a, 1c, 1e, and 1d were accepted, but 1b was not. In addition, the remaining interactions between the NAM constructs showed substantial relation, as was predicted. Therefore, hypotheses 2, 3, and 4 were confirmed. Additionally, the effect of awareness of consequences on TPB components was also significant; hence, H5a, H5b, and H5c were accepted. Moreover, the impact of TPB components on booster vaccination intention was significantly positive; therefore, H6a, H6b, and H6c were accepted as well. The hypothesis H7 showed an insignificant value. Therefore, it was rejected, while hypothesis H8 was supported.

Table 4. Summary of the structural equation modeling results.

			Standardized Estimate	t-Value	Hypothesis Results
H1a: universalism	→	Awareness of consequences of herd immunity	0.246	3.929 ***	Supported
H1b: Benevolence	→	Awareness of consequences of herd immunity	0.016	0.219	unsupported
H1c: Conformity	→	Awareness of consequences of herd immunity	0.442	3.933 ***	Supported
H1d: Tradition	→	Awareness of consequences of herd immunity	−0.189	−2.102 *	Supported
H1e: Security	→	Awareness of consequences of herd immunity	0.111	1.979 *	Supported
H2: Awareness of consequences of herd immunity	→	Ascribed responsibility	0.471	8.974 ***	Supported
H3: Ascribed responsibility	→	Personal norms	0.491	10.068 ***	Supported
H4: Personal norms	→	Booster vaccine intention	0.425	14.546 ***	Supported
H5a: Awareness of consequences of herd immunity	→	Attitude toward booster vaccine	1.395	17.484 ***	Supported
H5b: Awareness of consequences of herd immunity	→	Subjective norms	1.084	16.557 ***	Supported
H5c: Awareness of consequences of herd immunity	→	Perceived behavioral control	1.094	14.197 ***	Supported
H6a: Attitude toward booster vaccine	→	Booster vaccination intention	0.226	5.957 ***	Supported
H6b: Subjective norms	→	Booster vaccination intention	0.315	6.452 ***	Supported
H6c: Perceived behavioral control	→	Booster vaccination intention	0.165	3.788 ***	Supported
H7: Booster vaccine intention	→	Domestic travel intention	0.019	0.578	Unsupported
H8: Booster vaccine intention	→	International travel intention	0.395	9.190 ***	Supported
Total variance explained:		Total impact on international travel intention	Total impact on domestic travel intention		
R2 of AC = 0.340		CON = 0.302	CON = 0.006		
R2 of AR = 0.222		TRAD = −0.051	TRAD = −0.003		
R2 of PN = 0.241		SEC = 0.030	SEC = 0.001		
R2 of AVT = 0.774		UNIVER = 0.066	UNIVER = 0.003		
R2 of PBC = 0.590		BENEV = 0.004	BENEV = 0.000		
R2 of SN = 0.703		AV = 0.099	AV = 0.005		
R2 of BVI = 0.686		PBC = 0.065	PBC = 0.003		
R2 of DT = 0.000		SN = 0.112	SN = 0.006		
R2 of IT = 0.156		BVI = 0.395	BVI = 0.019		

Note 1: Goodness-of-fit statistics (Final model): $\chi^2 = 2441.392$, $df = 817$, $\chi^2/df = 2.988$, RMSEA = 0.061, CFI = 0.931, IFI = 0.931, TLI = 0.923, NFI = 0.900, PCFI = 0.842, * $p < 0.001$. Note 2: CON = Conformity, TRAD = Tradition, SEC = Security, UNIVR = Universalism, BENEV = Benevolence, AC = Awareness of consequences of herd immunity, AR = Ascription of responsibility, PN = Personal norms, AV = Attitude towards COVID-19 booster vaccine, PBC = Perceived behavioural control, SN = Subjective norms, BVI = Booster vaccine intention, DT = Domestic travel intention, and IT = International travel intention. * $p \leq 0.05$, *** $p \leq 0.001$.

The bootstrapping procedures were followed with 2000 re-samples and tested the significance of indirect relationships. The findings revealed that awareness of herd immunity consequences partially mediated the relationship between conformity, tradition, universalism, and ascription of responsibility, while it is a complete mediator between security and ascription of responsibility. Furthermore, as was predicted, the mediation relationship between NAM and vaccination intention was significant. Additionally, the findings showed that the indirect effect of awareness of consequences on booster vaccina-

tion intention through TPB constructs was partial (see Table 5). Figure 2 also contains the conceptual model with the findings of the SEM.

Table 5. Summary of indirect effect assessment results.

Indirect Effect of	On							
	AR	PN	AV	PBC	SN	BVI	DT	IT
CON	0.169 ***	0.121 ***	0.533 ***	0.418 ***	0.414 ***	0.374 ***	0.011	0.152 ***
TRAD	−0.080 *	−0.057 *	−0.253 *	−0.199 *	−0.197 *	−0.318 *	−0.010	−0.129 *
SEC	0.049	0.035	0.154	0.121	0.120	0.108	0.003	0.044
UNIVER	0.077 **	0.055 **	0.244 **	0.191 **	0.189 **	0.171 **	0.005	0.069 **
BENEV	0.006	0.005	0.020	0.016	0.016	0.014	0.000	0.006
AC	-	0.315 ***	-	-	-	0.977 ***	0.030	0.397 ***
AR	-	-	-	-	-	0.318 ***	0.010	0.129 ***
PN	-	-	-	-	-	-	0.014	0.181 ***
AV	-	-	-	-	-	-	0.007	0.092 ***
PBC	-	-	-	-	-	-	0.005	0.067 **
SN	-	-	-	-	-	-	0.010	0.128 ***

Note: CON = Conformity, TRAD = Tradition, SEC = Security, UNIVER = Universalism, BENEV = Benevolence, AC = Awareness of consequences of herd immunity, AR = Ascription of responsibility, PN = Personal norms, AV = Attitude towards COVID-19 booster vaccine, PBC = Perceived behavioural control, SN = Subjective norms, BVI = Booster vaccine intention, DT = Domestic travel intention, and IT = International travel intention. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

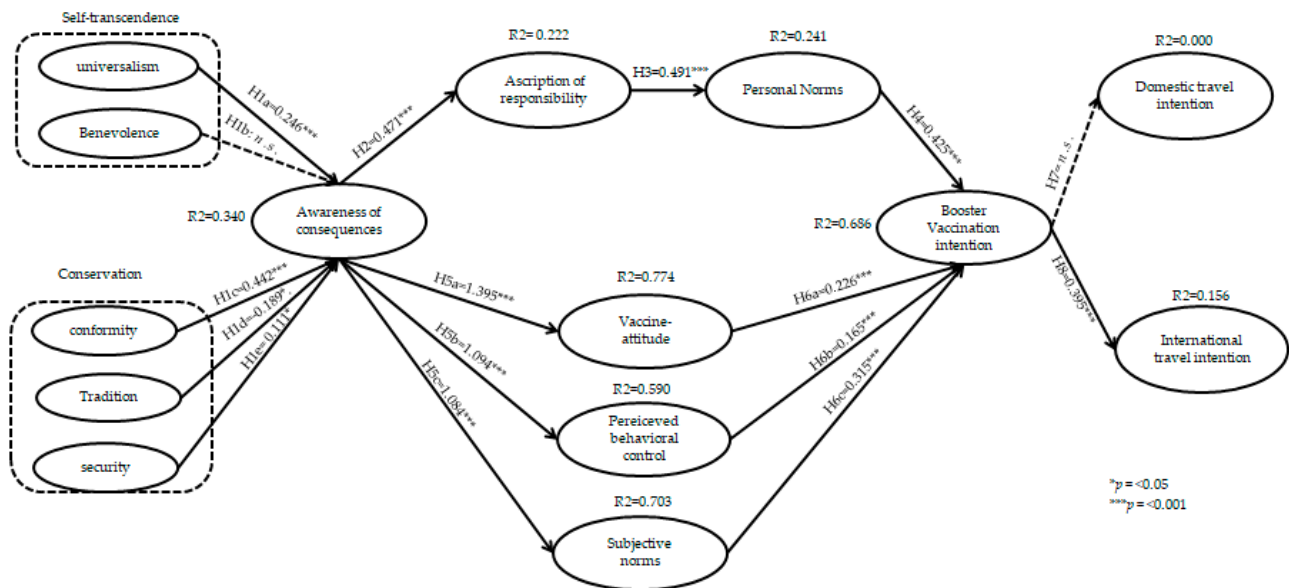


Figure 2. Conceptual model and the results of structural equation modeling.

5. Discussion

In the current study, we predicted that individuals’ prioritization of social focus value during the COVID-19 outbreak [26,27,29] would be associated with an increase in the intention of booster vaccination behavior as a result of morality and sense of reason through the lens of personal values, NAM, and TPB theories, which would subsequently increase the intention to travel both domestically and internationally.

Overall, the results of our study have confirmed the findings of earlier research and supported the hypotheses that have been put forth. More precisely, the awareness of the negative consequences when not acting pro-socially by vaccination was related to individuals’ care for other’s welfare and the maintenance of peaceful relationships with others. This was consistent with earlier research conducted [31,34], on the link between altruistic values and pro-social behavior during threatening situations. However, while other values positively influence the promotion of prosocial vaccination behavior,

traditional values have the opposite effect of what was anticipated. These results may make sense if we take into account the possibility that individuals from different cultures may have distinct relationships between traditional values and prosocial activities [24]; therefore, we must take into account the role that these values play in how Koreans perceive morality.

Furthermore, the data showed no link between the benevolence value and awareness of the consequences of vaccination-induced herd immunity. This is unexpected because it contradicts the conclusions of earlier research [29,30]. The unanticipated outcomes might be caused by the fact that, at the time of this research, there was no consensus among scientists as to whether vaccine recipients could still spread the disease but rather lower the likelihood of acquiring severe sickness with COVID-19 [28]; consequently, the stress on the healthcare system would be reduced, which could have positive effects on other people. However, as benevolence values mostly influence how one behaves toward “those with whom one is in frequent touch” [23], this indirect effect may not have been viewed as “prosocial” compared to the direct protection of one’s social surroundings.

Our study findings have also demonstrated that being aware of the effects of herd immunity has a favorable impact on a person’s perceived obligation to engage in pro-social activity, which, in turn, activates a personal norm toward altruism and immunization behavior. More specifically, a person’s understanding of consequences is linked to their goal, which in this situation is to assume responsibility for preventing diseases and protecting others by vaccination; being given this responsibility can inspire confidence in people, empowering them to act in accordance with their personal norm, then their personal norm influences a person’s sense of self-consciousness and, eventually, determines their behavioral intentions. As a result, Koreans’ personal norm and, consequently, their immunization behavior, are influenced by their knowledge of consequence and their sense of personal responsibility. These results reaffirm previous studies [46,47].

In addition, the significance of the link between awareness of consequences and TPB elements can be understood when considered in the context of Korean society. Given that the cooperative Korean culture is deeply embedded in unity, social wellbeing, and the welfare of everybody, individuals’ awareness of the effects of vaccination behavior on herd immunity could lead to the development of individuals’ knowledge base, which could then have a distribution effect on others and, accordingly, a more advantageous and beneficial perception toward vaccination behavior. Furthermore, the individual’s impression of simplicity or difficulty in doing behavior is affected. Numerous earlier investigations have supported the effect of subjective norms, attitude, and perceived behavioral control on intention [54,59].

Importantly, the results suggested that the strong intention toward booster vaccination in the study sample was the result of individuals’ beliefs and moral obligations towards themselves and others. Eventually, the strong intention toward booster vaccination led to a strong intention to travel internationally, which was consistent with previous studies about the correlation between vaccination and international travel [61,67]. The study’s findings, however, showed that there is no connection between the desire for immunization and domestic travel. Two factors may have contributed to the results. The first factor may be the Koreans’ trust in their government’s competence and policies to stop the spread of COVID-19, and the second is that since domestic travel is not subject to vaccine requirements, they viewed domestic immunization as being less significant.

6. Conclusions

6.1. Implications

This study confirms the value of an integrated model in a thorough knowledge of the cognitive variables that influence pro-social behavior in dangerous situations, in addition to underscoring the necessity of global travel immunization during health crises. Theoretically, our research adds to the body of knowledge about how social and psychological elements that influence pro-social behavior are influenced by communal values.

This article broadens the planned behavior model's extension theory, integrates individual standards of morality into the basic theory, confirms the beneficial effects of the TPB components on intention, and affirms that individual morals have a significant positive effect on intention. Within this perspective, the paper advances the integrated framework as a potential ideology in behavior prediction while also improving the understanding of behavioral bases.

In practice, the findings of this study suggest that adopting a pro-social health practice (booster vaccination) that lowers any potential risk may encourage people to travel overseas. In other words, considering the chronic characteristic of COVID-19, strategies, focusing on such characteristics could provide an effective technique to cope with the current endemic and any ensuing crises, which, in turn, could aid in the tourism industry's quick recovery.

This study may also have health promotion implications in terms of how value-based prioritization can be utilized to inspire social responsibility and moral obligation, which can then be used to support the adoption of healthy practices. These findings can be used to help minimize vaccine complacency and hesitation during crises, as well as to encourage the adoption of health behaviors when traveling because health behaviors and a positive travel experience are inextricably linked.

Overall, adopting a pro-social health practice, such as booster vaccination, can help promote sustainable tourism practices that prioritize community health and wellbeing and encourage people to travel overseas. Increased travel can support sustainable development by contributing to economic growth and job creation, particularly in developing countries that rely on tourism as a major source of income. This can lead to improvements in infrastructure, education, and healthcare, thereby increasing social and economic sustainability.

6.2. Limitation and Future Research

There are limitations in the investigation that should be taken into account.

First, the study was carried out in South Korea and utilized a convenience sampling method, which can limit the generalizability of study findings; future studies are required to determine whether our findings hold over a wider range of sociodemographic, socioeconomic backgrounds and geographical region contexts, as well as considering the pandemic-affected situations and whether they might be greater in nations that were more severely affected by the pandemic.

Second, our analysis focused on the associations between vaccination and travel inclination but did not investigate whether vaccination affects other travel-related decisions, such as the form of transport, length of stay, or type of lodging. More study is needed to investigate those factors. Finally, the causal relationship between values, morality, and communality in predicting pro-social behavior could be affected by other confounding variables, such as age and gender. Therefore, further investigation is needed to determine what factors could affect the correlation between the above-mentioned variables.

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Appendix A Measurement items

Table A1. Measurement Items.

Constructs	Measurement Items
Conformity	<ul style="list-style-type: none"> I believe that people should do what they are told. I think people should follow rules all the time, even when no one is watching.
Tradition	<ul style="list-style-type: none"> I think it is important to do things the way I learned from my family. I want to follow my customs and traditions.
Universalism	<ul style="list-style-type: none"> I think it is important that every person in the world should be treated equally. I want justice for everybody, even for people I do not know.
Benevolence	<ul style="list-style-type: none"> I always want to help the people who are close to me. It is very important to me to care for the people I know and like.
Security	<ul style="list-style-type: none"> The safety of my country is very important to me. I want my country to be safe from its enemies.
Vaccine attitude	<ul style="list-style-type: none"> I think taking the COVID-19 vaccine is a sensible choice. Following Korean government recommendation to take the COVID-19 vaccine would protect me from getting seriously ill. I think that following Korean government recommended COVID-19 vaccination program is the correct choice.
Vaccine attitude	<ul style="list-style-type: none"> Following Korean government recommendation to take the COVID-19 vaccine will make me feel safe. I believe that following Korean government recommended COVID-19 vaccination program is an intelligent choice. Following Korean government recommendation to take COVID-19 vaccine will make me feel calm.
Vaccine attitude	<ul style="list-style-type: none"> I think taking COVID-19 vaccine is a sensible choice. Following Korean government recommendation to take the COVID-19 vaccine would protect me from getting seriously ill. I think that following the Korean government recommended COVID-19 vaccination program is the correct choice.
Vaccine attitude	<ul style="list-style-type: none"> Following Korean government recommendation to take the COVID-19 vaccine will make me safe. I believe that following Korean government recommended COVID-19 vaccination program is an intelligent choice. Following Korean government recommendation to take the COVID-9 vaccines will make me feel calm.
Perceived behavioral control	<ul style="list-style-type: none"> Whether or not I follow the recommendation to take COVID-19 vaccine is completely up to me. I am capable of getting the recommended COVID-19 vaccine. I am confident that if I want, I can go get the COVID-19 vaccine.
Subjective norm	<ul style="list-style-type: none"> Most people who are important to me agree that I take the COVID-19 vaccine. Most people who are important to me support that I take the COVID-19 vaccine. Most people who are important to me understand that I take the COVID-19 vaccine. Most people who are important to me recommend that I take the COVID-19 vaccine.
Booster vaccine intention	<ul style="list-style-type: none"> I will make an effort to register for the COVID-19 vaccine. I have an intention to receive the COVID-19 vaccine. I am willing to take the COVID-19 vaccine.
Awareness of consequences of herd immunity	<ul style="list-style-type: none"> COVID-19 vaccine is an important tool to help stop the COVID-19 pandemic. Communities can reach “herd immunity” if enough people take the COVID-19 vaccine. Getting the COVID-19 vaccine can protect others from you and contribute to the population reaching herd immunity.

Table A1. Cont.

Constructs	Measurement Items
Ascription of responsibility	<ul style="list-style-type: none"> I believe that everybody in the community is responsible for the spread of COVID-19 because it is highly transmissible. I feel that everybody in the community is responsible for the spread of COVID-19 caused by contracting the virus and spreading it to more people around you. Everybody must take the responsibility to prevent further spread of COVID-19.
Personal norm	<ul style="list-style-type: none"> I feel an obligation to protect people in my community from COVID-19. Regardless of what other people do, because of my own values/principles, I feel that I should take the COVID-19 vaccine.
International travel intention	<ul style="list-style-type: none"> I feel it is important to take the COVID-19 vaccine, reducing the rate of transmission in my community. I feel it is important that everybody in the community decide to take the COVID 19 vaccine. After taking the vaccine of COVID-19, I would like to travel internationally sometimes in the future. I prefer to travel internationally after getting the vaccine of COVID-19. I will recommend my friends and family to travel internationally after getting the COVID-19 vaccine.
Domestic travel intention	<ul style="list-style-type: none"> After getting the COVID-19 vaccine, I will make an effort to travel within Korea in the near future. I have an intention to travel within Korea in the near future if I had the COVID-19 vaccine. I am willing to travel within Korea in the near future if I had the COVID-19 vaccine. I am willing to find time and money to travel within Korea after getting the COVID-19 vaccine.

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