



The Short-run and Long-run Behavioral Effects of Vaccination Enforcement in Turkey

Baser O^{1,2}, Rodchenko K³, Chen L³, Yapar N³

¹Graduate School of Public Health, City University of New York, New York, NY;

²Department of Internal Medicine, University of Michigan, Ann Arbor, MI; ³Columbia Data Analytics, New York, NY

OBJECTIVES

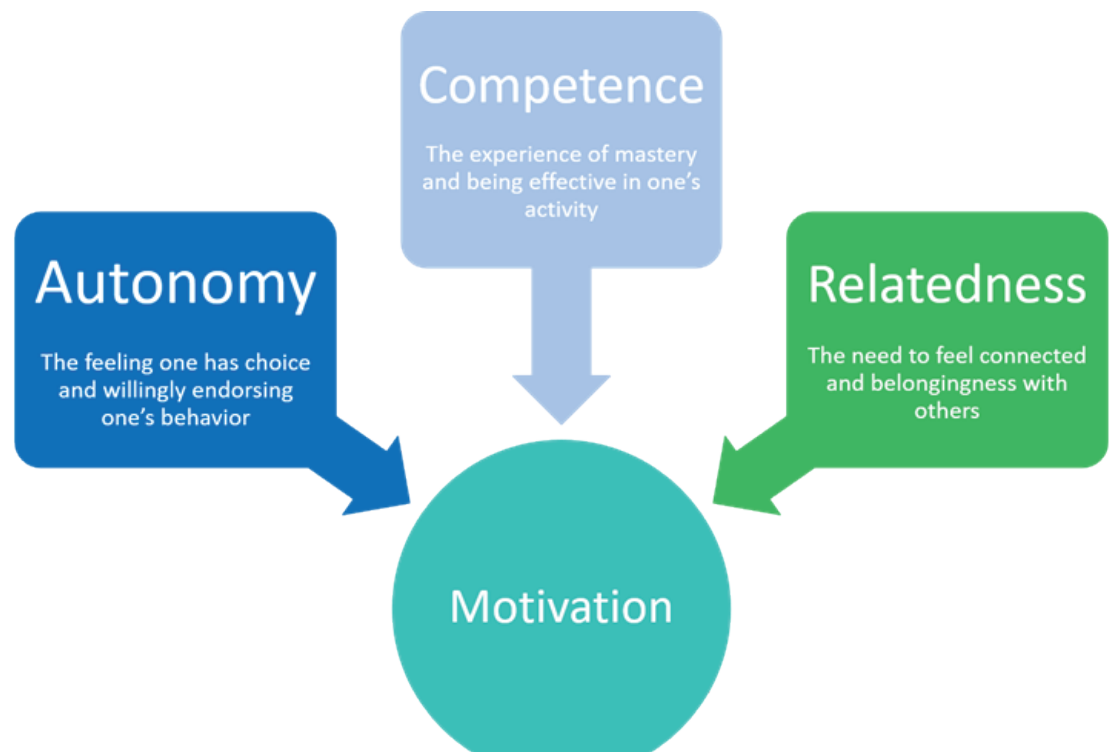
The study aims to evaluate attitudes toward COVID-19 vaccination mandates and the impact of policies on vaccine adoption and future vaccination behavior utilizing self-determination theory in Turkey.

BACKGROUND

The COVID-19 pandemic spurred global vaccination efforts to reach herd immunity, highlighting the importance of measures to contain its spread. COVID-19 vaccines are crucial because they provide a highly effective and safe way to protect individuals from severe illness, reduce the spread of the virus within communities, and ultimately help end the global pandemic. As of August 23, 2021, COVID-19 vaccination levels were insufficient to achieve herd immunity, and despite vaccine availability, only 54% of Turkey’s population received at least one dose of the COVID-19 vaccine.¹⁻³

To implement effective interventions toward ending the pandemic, it is essential to understand why people are motivated and willing to receive vaccination. Self-determination theory (SDT) presents a broad framework for studying human motivation and personality (Figure 1).

Figure 1. Self-Determination Theory



Source: <https://www.urmc.rochester.edu/community-health/patient-care/self-determination-theory.aspx>

The individual’s experience of autonomy, competence, and relatedness supports basic psychological needs, and current literature shows that meeting these needs is essential for adherence to preventive COVID-19 measures. A lack of these characteristics leads to hesitancy and defensiveness, contributing to conspiracy theories and low motivation.^{4,5} Vaccine mandates worldwide have evoked diverse public responses.⁶

METHODS

We conducted a cross-sectional study among adults in Turkey between August 23, 2021, and April 5, 2022. Using an online survey, we investigated the relationship between respondents’ psychological needs (autonomy, competence, and relatedness) and their willingness and motivation to vaccinate against COVID-19. Moreover, the study examined the possible impact of vaccine mandates on these needs.

Main Outcome Measures

- 1) Need Satisfaction and Need Frustration: for each psychological need, autonomy, relatedness, and competency were assessed with two questions for each need satisfaction and frustration, rating them on a 1-5 scale (Table 1).
- 2) Vaccination behavior was determined by asking participants whether they were vaccinated and, if so, the number of doses they received.
- 3) Willingness to receive vaccination was determined on a 1-5 scale.
- 4) Attitudes toward mandatory vaccination were measured by demonstrating the extent to support three scenarios: (1) full vaccination required for certain activities; (2) full vaccination or a recent negative test to perform activities; (3) mandatory full vaccination for all residents.
- 5) Motivation to get vaccinated or not was measured using a 1-7 scale, like the Treatment Self-Regulation Questionnaire (TSRQ) (Table 2).

Table 1. Basic psychological needs and their reliability coefficients

Psychological Need Satisfaction and Frustration	Cronbach's Alpha
Autonomy satisfaction	α = 0.6454
I feel [felt] a sense of choice and freedom in the decision to get vaccinated (Q11)	
I feel [felt] that my decision to get vaccinated reflects what I really want (Q15)	
Autonomy frustration	α = 0.3476
I feel [felt] forced to get vaccinated (Q14)	
I feel [felt] that I will [would] be 'punished' if I didn't get vaccinated (Q17)	
Competence satisfaction	α = 0.7610
I feel [felt] confident that I could get vaccinated if I wanted to (Q13)	
I feel [felt] capable of getting vaccinated if I wanted to (Q21)	
Competence frustration	α = -0.8788
I have [had] serious doubts about whether I could get vaccinated if I wanted to (Q23)	
I feel [felt] that it would be difficult for me to get vaccinated if I wanted to (Q16)	
Relatedness satisfaction	α = 0.7763
I feel [felt] that the official authorities care about me (Q22)	
I feel [felt] that the official authorities understand [understood] my needs (Q18)	
Relatedness frustration	α = 0.6548
I feel [felt] excluded by the official authorities (Q20)	
I feel [felt] that the official authorities are [were] cold and distant (Q12)	

We conducted statistical analysis to investigate relationships between psychological needs, willingness, and intention to get vaccinated. Further, we assessed the correlation between need frustration and motivation.

Table 2. Types of motivation and their reliability coefficients

Motivations to Get/Not Get Vaccinated	Cronbach's Alpha
Identified motivation	α = 0.6501
Because I feel that I want to take responsibility for my own health (Q24)	
Because I have carefully thought about it and believe this decision is very important for many aspects of my life (Q29)	
Introjected motivation (these two questions are complementary)	α = 0.8149
Because I would feel bad about myself if I did [didn't] get vaccinated (Q31 Q32)	
Because I would feel guilty or ashamed of myself if I did [didn't] get vaccinated (Q33 Q34)	
External motivation (these two questions are complementary)	α = -0.1308
Because I feel under pressure from others [not] to get vaccinated (Q25 Q26)	
Because other people would be upset if I do [don't] get vaccinated (Q28 Q27)	
Amotivation	α = 0.5656
I really don't think about it (Q35)	
I don't really care (Q30)	

RESULTS

We included 430 participants from Turkey in our analysis. Of 22 unvaccinated individuals, 73% said they intended to get vaccinated while 27% did not. Table 3 provides respondents’ demographic characteristics and their COVID-19 vaccination status.

Linear regression was conducted to assess the relationship between people’s psychological needs and willingness to receive vaccination (Table 4).

Autonomy satisfaction was the top predictor of people’s willingness to receive the vaccine. Those who felt a greater sense of autonomy over their decision-making process were more inclined to embrace vaccination, emphasizing the significance of respecting individuals’ autonomy in healthcare decisions.

RESULTS (cont’d)

Competence frustration also predicted willingness to receive vaccination. The more they doubted that they could get the vaccine if they wanted to, the less willing they were to vaccinate.

The logistic regression analysis aimed to uncover the factors influencing individuals’ vaccination decisions (Table 5).

Table 3. Demographics and COVID-19 vaccination status

Characteristic	(n=430)
Age (yr)	
18-29	53.72%
30-49	33.72%
50-65	10.00%
65+	2.33%
Gender	
Male	42.09%
Female	57.67%
Nonbinary	0.23%
Education (highest level)	
No formal education	0.00%
Primary school	0.00%
Secondary school	6.28%
Undergraduate degree	70.93%
Postgraduate degree	22.79%
Vaccination status	
Unvaccinated	4.88%
Single dose	7.91%
Two doses	87.21%

Table 4. Linear regression of psychological needs and one’s willingness to get vaccinated

Term	Coefficients from Linear Regression		
	β	t-Statistic	P Value
Autonomy satisfaction	0.64835	15.22	<.0001
Autonomy frustration	-0.02664	-0.66	0.5083
Competence satisfaction	-0.04196	-0.95	0.3410
Competence frustration	-0.11391	-2.13	0.0339
Relatedness satisfaction	0.05169	1.04	0.2970
Relatedness frustration	-0.00881	-0.18	0.8596

Table 5. Logistic regression of psychological needs and one’s decision to get vaccinated

Term	Coefficients from Logistic Regression		
	OR	t-Statistic (Estimate)	P Value
(Intercept)	2.843	1.0448	0.7307
Autonomy satisfaction	1.168	0.1556	0.6715
Autonomy frustration	0.671	-0.3994	0.365
Competence satisfaction	0.664	-0.4088	0.3806
Competence frustration	1.124	0.1166	0.8408
Relatedness satisfaction	3.597	1.2801	0.0312
Relatedness frustration	2.147	0.7639	0.1737

OR: odds ratio

Relatedness satisfaction most strongly predicted one’s intention to get vaccinated, indicating that the more people perceived that the authorities cared about and understood their needs, the more likely they were to indicate an intention to get vaccinated.

According to the SDT, three psychological needs (autonomy, competence, and relatedness) are critical in improving health. That is because satisfying these needs promotes engagement in self-motivated activities, leading to positive changes in health behavior. Additionally, autonomously motivated behavior tends to be sustained over time because a person engages in it for its own sake, whereas people motivated by external rewards experience difficulties initiating the behavior change and sustaining it over time.^{5,7,8}

Therefore, we explored how need frustration influences motivation for vaccination (Table 6).

Table 6. Correlations between need frustration and motivation

Motivation	Autonomy Frustration	Competence Frustration	Relatedness Frustration
External	0.44361*	0.24301*	0.18388*
Amotivation	-0.00430*	0.14046*	0.24084*
Identified	0.24970	0.28583*	-0.03696
Introjected	0.25956*	0.20898*	-0.01470

*P < .001

Limitations:

Variability in data collection and reporting may affect the precision of vaccination rates and hesitancy assessment. Cultural variations in vaccination situations differ within Turkey and across regions, and the limitations faced by Turkey may not apply universally. Mandates raise ethical and privacy issues that extend beyond this discussion, influencing policy-making and public discourse. This text primarily focuses on Turkey, but the global context of COVID-19 vaccination and herd immunity presents diverse challenges, necessitating a broader perspective for a comprehensive understanding.

CONCLUSION

Need satisfaction, especially autonomy and relatedness satisfaction, promotes positive vaccination behavior. Need frustration, which correlates with external motivation, has a negative impact on one’s willingness and intention to receive the COVID-19 vaccine across Turkey’s population.

Governments and care providers can create an autonomy-supportive environment by helping individuals feel they are cared for, acknowledging their emotions, and considering their perspective. Campaigns providing reliable and sufficient information about vaccination that could help people make informed and autonomous decisions might prove to be more effective in sustaining positive vaccination behavior over time than external motivations such as vaccination enforcement.

REFERENCES

1. Our World in Data. Coronavirus (Covid-19) Vaccinations. Updated August 22, 2023. Accessed August 23, 2023. <https://ourworldindata.org/covid-vaccinations>
2. García-García D, Morales E, Fonfría ES, Vigo I, Bordehore C. Caveats on COVID-19 herd immunity threshold: the Spain case. Scientific Reports. 2022;01/12 2022;12(1):598. doi:10.1038/s41598-021-04440-z
3. McNamara D. Delta Variant Could Drive 'Herd Immunity' Threshold Over 80%. Updated August 3. Accessed April 26, 2022. <https://www.webmd.com/lung/news/20210803/delta-variant-could-drive-herd-immunity-threshold-over-80>
4. University of Rochester Medical Center. Self-Determination Theory. Our Approach. Accessed August 10, 2022. <https://www.urmc.rochester.edu/community-health/patient-care/self-determination-theory.aspx>
5. Flannery M. Self-Determination Theory: Intrinsic Motivation and Behavioral Change. Oncol Nurs Forum. Mar 1 2017;44(2):155-156. doi:10.1188/17-Onf.155-156
6. University of Rochester. Self determination theory. Accessed October 23, 2023, <https://www.urmc.rochester.edu/community-health/patient-care/self-determination-theory.aspx>
7. Lourenço J, Almagro BJ, Carmona-Márquez J, Sáenz-López P. Predicting Perceived Sport Performance via Self-Determination Theory. Percept Mot Skills. Oct 2022;129(5):1563-1580. doi:10.1177/0031512522119121
8. Ntoumanis N, Ng JYY, Prestwich A, et al. A meta-analysis of self-determination theory-informed intervention studies in the health domain: effects on motivation, health behavior, physical, and psychological health. Health Psychol Rev. Jun 2021;15(2):214-244. doi:10.1080/17437199.2020.1718529



Columbia Data Analytics

Columbia Data Analytics
145 Hudson St, Suite 205
New York, NY 10013
www.cdany.com