

Intentions Regarding Genetic Testing Among the US Population: A Survey Using Theory of Planned Behavior

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BACKGROUND AND OBJECTIVE

- Existing literature suggests that a large US-based survey to examine genetic testing intention guided by the Theory of Planned Behavior (TPB) or other social cognitive theories is lacking.
- A systematic review of genetic testing and lifestyle behavior change highly recommends use of TPB to evaluate genetic testing behavior change.¹
- The objective was to assess intention to get genetic testing among the United States (US) population, and how this may vary by racial-ethnic group and rural-urban status.

METHODS

- A Qualtrics panel was used to recruit adults (N = 1600) in the US general public for a cross-sectional survey in 2022.
- Based on the Theory of Planned Behavior (TPB) construct of intention, identical sets of 3 questions examined intention to get genetic testing for seven diseases, divided into two sections related to diagnosis versus treatment.
- The diagnosis section focused on the intention to get genetic testing to predict risk of getting Alzheimer’s disease, cancer, Huntington’s disease, and macular degeneration.
- The treatment section focused on the intention to get genetic testing to guide choice of treatment for cancer, chronic pain, depression, and heart disease.
- Mean intention scale scores (from 1-5) with standard deviation were calculated for each disease, with comparisons made using ANOVA and t-tests.

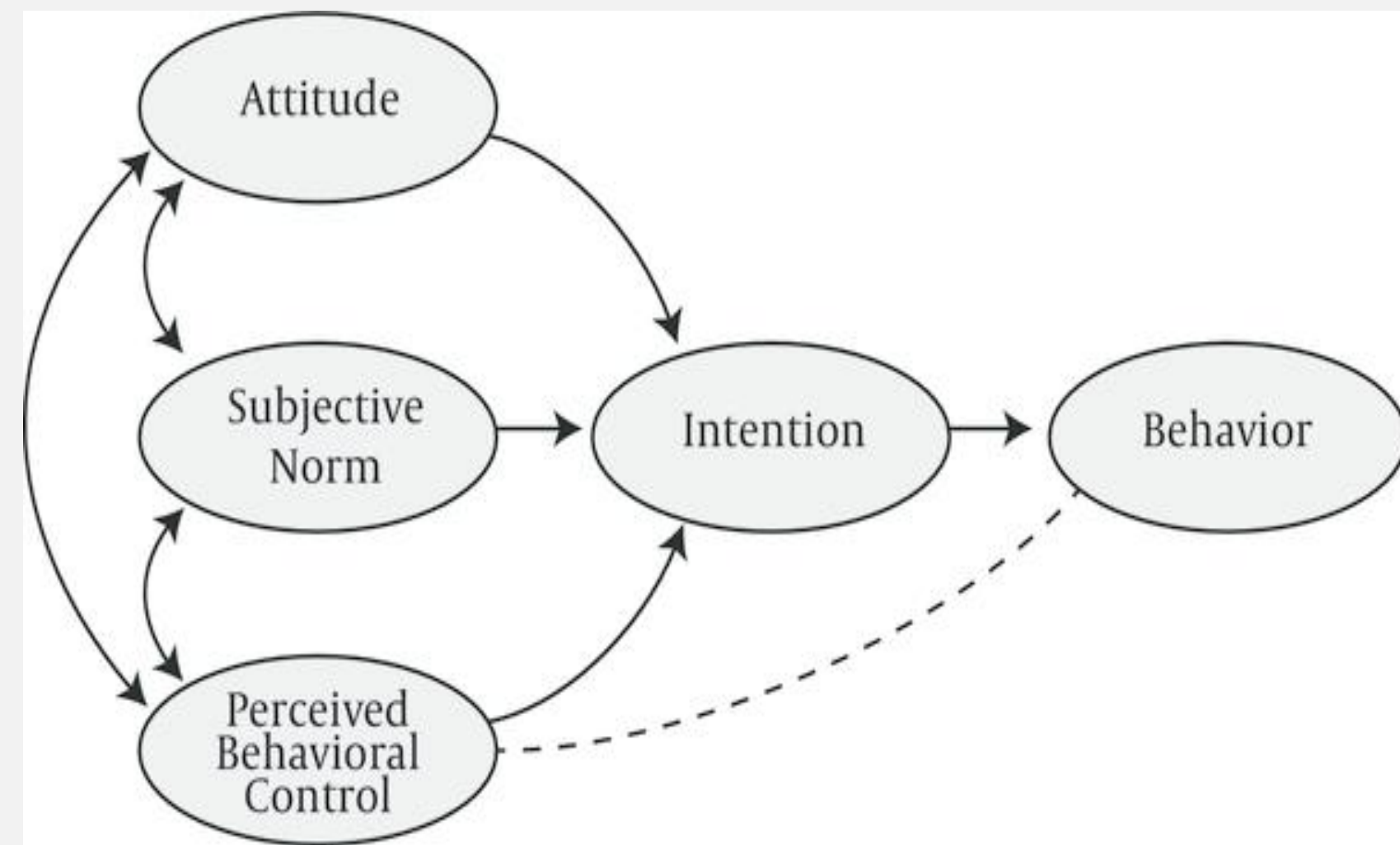


Figure 1: Theory of Planned Behavior

RESULTS

Table 1: Respondent Characteristics

Characteristics	Frequency, N (%)
Sex	
Male	698 (43.63%)
Female	902 (56.38%)
Race/ethnicity	
Non-Hispanic African American	411 (25.69%)
Non-Hispanic White	545 (34.06%)
Non-Hispanic Asian	232 (14.50%)
Hispanic or Latino(a)	412 (25.75%)
Age	
18-34 years	276 (17.25%)
35-49	332 (20.75%)
50-64	470 (29.38%)
65-74	351 (21.94%)
75+	171 (10.69%)
Rurality	
Rural	520 (32.50%)
Suburban	629 (39.31%)
Urban	451 (28.19%)
Regions	
South	683 (42.69%)
West	376 (23.50%)
Northeast	289 (18.06%)
Midwest	252 (15.75%)

Additional notes on demographics:

- Medicare and employer-sponsored insurance were ranked the highest, 36% each, when asked about the type of insurance they use.
- Forty percent of the respondents had high blood pressure and a quarter of the total respondents said they had anxiety and depression.

Table 2: Reliability Assessment Scores for Intention Related to “Risk of Diseases”

Themes of Questionnaire	Number of Items	IC for Alzheimer’s	IC for Cancer	IC for Huntington’s Disease	IC for Macular Degeneration
Intention	3	0.90	0.90	0.92	0.91

IC = Internal Consistency, Cronbach’s Alpha

Table 3: Continuous Intention Scale Scores For “Risk of Diseases”

Diseases	Overall (Mean ± SD)	Race-Ethnicity (Mean ± SD)						Rurality (Mean ± SD)		
		White	Black	Asian	Hispanic	ANOVA	Significant Comparisons	Rural	Urban	T-test
Alzheimer’s	3.76 ± 1.04	3.67 ± 1.11	3.69 ± 1.07	3.61 ± 1.03	4.05 ± 0.83	P < 0.0001	H vs. W, H vs. B, H vs. A	3.67 ± 1.11	3.81 ± 0.99	P = 0.013
Cancer	3.91 ± 0.99	3.88 ± 1.03	3.80 ± 1.08	3.81 ± 0.97	4.12 ± 0.80	P < 0.0001	H vs. W, H vs. B, H vs. A	3.84 ± 1.07	3.94 ± 0.95	P = 0.07
Huntington’s Disease	3.55 ± 1.11	3.43 ± 1.18	3.42 ± 1.14	3.50 ± 1.05	3.86 ± 0.95	P < 0.0001	H vs. W, H vs. B, H vs. A	3.45 ± 1.15	3.59 ± 1.09	P = 0.02
Macular Degeneration	3.74 ± 1.04	3.70 ± 1.07	3.70 ± 1.09	3.62 ± 1.01	3.92 ± 0.93	P = 0.001	H vs. W, H vs. B, H vs. A	3.70 ± 1.10	3.77 ± 1.01	P = 0.22

Table 4: Reliability Assessment Scores for Intention Related to “Choice of Treatments”

Themes of Questionnaire	Number of Items	IC for Cancer	IC for Chronic Pain	IC for Depression	IC for Heart Disease
Intention	3	0.89	0.89	0.90	0.89

IC = Internal Consistency, Cronbach’s Alpha

Table 5: Continuous Intention Scale Scores For “Choice of Treatments”

Diseases	Overall (Mean ± SD)	Race-Ethnicity (Mean ± SD)						Rurality (Mean ± SD)		
		White	Black	Asian	Hispanic	ANOVA	Significant Comparisons	Rural	Urban	T-test
Cancer	4.20 ± 0.85	4.22 ± 0.87	4.20 ± 0.88	4.07 ± 0.85	4.25 ± 0.80	P = 0.07	None	4.20 ± 0.87	4.20 ± 0.85	P = 0.99
Chronic Pain	3.92 ± 0.94	3.88 ± 0.95	3.91 ± 0.95	3.80 ± 0.97	4.07 ± 0.90	P = 0.002	H vs. W, H vs. A	3.92 ± 0.96	3.92 ± 0.94	P = 0.87
Depression	3.83 ± 0.99	3.79 ± 0.97	3.77 ± 1.05	3.77 ± 0.98	3.99 ± 0.96	P = 0.003	H vs. W, H vs. B, H vs. A	3.80 ± 1.03	3.85 ± 0.98	P = 0.19
Heart Disease	4.05 ± 0.89	4.01 ± 0.90	4.03 ± 0.92	3.91 ± 0.94	4.18 ± 0.81	P = 0.002	H vs. W, H vs. A	4.01 ± 0.92	4.06 ± 0.88	P = 0.33

SUMMARY OF FINDINGS

- Of 1,600 respondents, mean age was 53 ± 16.42 years, and more than half (56%) were female.
- A large portion were minorities (26% Black and 26% Hispanic/Latino) and 33% of respondents resided in rural areas.
- In both diagnosis and treatment sections, cancer had the highest mean scale score for testing intention (3.91 ± 0.99 and 4.20 ± 0.85).
- Huntington’s disease and depression had the lowest testing intention scores (3.55 ± 1.11 and 3.83 ± 0.99).
- All testing intention scores significantly varied by race/ethnicity (all P<0.05) except in the choice of treatment section for cancer.
- Testing intention scores for Alzheimer’s disease (P=0.013) and Huntington’s disease (P=0.02) were significantly different between rural and urban residents. No other intention scores varied significantly by rural-urban status.

CONCLUSIONS

- Intention to get genetic testing may significantly vary by racial-ethnic group and rural-urban status, depending on disease and testing purpose.
- Future studies should investigate root causes behind these intention differences, to inform genetic testing interventions.

Reference

- Horne J, Madill J, O’Connor C, Shelley J, Gilliland J. A Systematic Review of Genetic Testing and Lifestyle Behaviour Change: Are We Using High-Quality Genetic Interventions and Considering Behaviour Change Theory? *Lifestyle genomics*. 2018;11(1):49-63.

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