

Section 2: English Abstract

Full title of research project

The impact of media channels, message types and message conveyors on the responsiveness of different communities to government directives given different levels of crisis: a real time experiment during the process of the Coronavirus epidemic

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Key Words

Compliance intentions; Public policy; Health policy; Factorial survey-experiment; Social groups; Crisis; Pandemic

Abstract

SCIENTIFIC BACKGROUND: Compliance rates with health guidelines during a crisis vary between citizens in general, and social/minority groups in particular. This could be explained by socio-economic and socio-political variables as well as by other well-researched compliance related variables, such as message type, conveyer and the channel thorough which it is conveyed. **OBJECTIVES:** To identify the factors associated with compliance with health instructions of different social groups, during an on-going and dynamic health crisis. **METHODOLOGY:** 3 on-line factorial survey-experiments, held in different levels of crisis severity of the Coronavirus pandemic were conducted in Israel, with participants from the Arab, Ultra-Orthodox and the general Jewish communities, during October 2020 (N=614) December 2020 (N=1,184) and November 2021 (N=953). Applying a progressive research design strategy, participants were presented with vignettes simulating government instructions in inter-factorial combinations and were asked to report their compliance intentions. Psychological and political factors were collected as well, and a between-subjects analysis was performed. **FINDINGS:** In all 3 experiments, there were no significant interactions between social group affiliation and compliance-related variables. Perceived guidelines' benefits, barriers and self-efficacy to perform them, were associated with compliance intentions. Message type, conveyer and channel, crisis severity, perceived risk of the pandemic, the level of government intervention and trust in government were not. **CONCLUSIONS:** Social group affiliation does not seem to moderate the effects of compliance-related factors. While some classic health-behavior factors predict compliance intentions in the examined context (perceived benefits, barriers and self-efficacy), others, seem un-related to them. **POLICY RECOMMENDATIONS:** During a sever health crisis, guidelines should emphasize their benefits and feasibility. Barriers should be addressed and dismantled. Similar compliance rates may be achieved by either mandates, incentives or information provision alone. Guidelines and instructions should be conveyed by many conveyers, channels and styles.

Section 3: Hebrew Abstract

כותרת מלאה של המחקר

בחינת השפעתם של ערוצי תקשורת, סוגי מסר ומעבירי מסר על היענות קהלים שונים להנחיות הממשלה ברמות משבר שונות: ניסוי בזמן אמת לאורך מגפת הקורונה בישראל

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מילות מפתח

כוונות היענות; מדיניות ציבורית; מדיניות בריאות; סקר-ניסוי פקטוריאלי; מגזרים; משבר; מגיפה

תקציר

תקציר שאורכו עד **200 מילים**, אשר יכלול כותרים אלה: (1) רקע (2) מטרות (3) שיטה (4) ממצאים עיקריים (5) מסקנות (6) המלצות / השלכות לקובעי המדיניות

רקע: שיעורי היענות ציבור להוראות בריאות בעת משבר משתנים בין אזרחים ומגזרים שונים. שונות זו עשויה לנבוע משילוב של גורמים סוציו-אקונומיים וסוציו-פוליטיים ומשתנים אחרים הידועים כקשורים להיענות ציבור, כגון סוג המסר, מעבירו וערוץ העברתו. **מטרות:** זיהוי המשתנים הקשורים להיענותם של מגזרים שונים להוראות בריאות בעת משבר בריאות מתמשך. **שיטה:** שלושה סקרי-ניסוי פקטוריאליים, ברמות משבר שונות בזמן מגיפת הקורונה בישראל בוצעו במגזר הערבי, החרדי ובאוכלוסייה היהודית הכללית באוקטובר 2020 (N=614), דצמבר 2020 (N=1,184) ונובמבר 2021 (N=953). למשתתפים הוצגו הוראות בריאות מדומות כקטעים בעלי מאפיינים שונים, והם נתבקשו לדווח על כוונות היענותם. נמדדו משתנים פסיכולוגיים ופוליטיים ובוצע ניתוח בין-נבדקי. **ממצאים עיקריים:** בכל הניסויים, משתנים הקשורים לכוונות היענות נמצאו ככאלו באופן זהה בכל המגזרים. יתרונותיהן הנתפסים של ההוראות, החסמים והחוללות לביצוען נמצאו קשורים לכוונות להיענות. סוג ומעביר המסר, ערוץ העברתו, חומרת המשבר, הסיכון הנשקף ממנו, מידת מעורבות הממשלה ואמון בממשלה לא נמצאו קשורים לכוונות להיענות. **מסקנות:** מגזר אינו מממן את הקשרים שבין משתנים שונים לכוונות היענות. לא כל המשתנים המוכרים מספרות ההיענות קשורים לכוונות היענות בהקשר הנוכחי. **המלצות מדיניות:** על הוראות בריאות להדגיש את יתרונותיהן ואת קלות ביצוען, ולהתייחס לחסמים לביצוען ולפתרונם. ניתן להגיע לשיעורי היענות דומים בחקיקה מחייבת, תמריצים או מתן מידע. מומלץ להעביר הוראות בריאות ע"י מספר מעבירי מסר, ערוצים וסגנונות.

Section 4: Executive Summary- Hebrew

1. רקע מדעי: היענות ציבור להוראות בריאות בעת משבר הינה חיונית למיגור ולשליטה במשבר ובגורמיו. אולם, משבר נגיף הקורונה הנוכחי, המחיש כי לא כל האזרחים נענים להוראות הבריאות באותה מידה. תשומת לב ציבורית רבה הופנתה למגזרים וקבוצות מיעוטים, אשר הדגימו, לפחות בחלק מהזמן, דפוסי היענות שונים מאלו של קבוצת הרוב באוכלוסייה. על מנת להסביר שונות זו נבחנו במחקר הנוכחי שורה של משתנים סוציו-אקונומיים וסוציו-פוליטיים, המאפיינים קבוצות אלו וכן משתנים אחרים המוכרים מספרות ההיענות ומדיניות הבריאות. למשל, בהתבסס על תאוריות מתחום ההיענות, השכנוע והשפעות המדיה נבחנו המידה בה סוג הוראת הבריאות, מי שמעביר אותה, סוג המסר והערוץ שבו היא נמסרת לאוכלוסיית המטרה, עשויים להשפיע על הנכונות להיענות להוראות הבריאות (Petty & Cacioppo, 1986). כמו כן, נבחנו משתנים המתבססים על גישות הגורסות כי תחושת השליטה של הפרט (Kay et al., 2008) או מידת המעורבות והשליטה של הממשלה, כפי שמשתקפת מהוראותיה (Frey & Jegen, 2001), קשורות לנכונות להיענות להוראות אלו. לבסוף, נבחנו משתנים הנגזרים ממודל אמונות הבריאות (Health Belief Model; Janz & Becker, 1984), התולה את ההיענות להוראות בריאות במאזן שבין היתרונות הנתפסים של ההוראה בעיני הפרט, תפיסת הסיכון מהמצב הרפואי בו הפרט נתון, החסמים העומדים בפניו לבצע את ההוראה והחוללות הנתפסות שלו לביצוע ההוראה.

משתנים אלו עשויים להשתלב עם מאפייניהם הייחודיים של קבוצות שונות באוכלוסייה ולהשפיע על האופן בו קבוצות אלו תופסות את הוראות הבריאות וכפועל יוצא גם על נכונותן להיענות להן. בנוסף, מאפייניו חסרי התקדים של משבר הקורונה הנוכחי, הן בחומרתו והן בקנה המידה שלו, עשויים לשנות את האופן בו בני כל המגזרים מבצעים שיקולים רציונאליים של עלות-תועלת, בבואם להחליט האם להיענות להוראות בריאות הניתנות על ידי הממשלה, בהשוואה לימי שגרה. לכן ישנה חשיבות רבה בזיהוי המשתנים הקשורים להיענותם של מגזרים שונים להוראות בריאות בפרט ושל האוכלוסייה כולה בכלל, בזמן משבר בריאות חריף ומתמשך.

2. מטרות המחקר: מחקר זה שואף לזהות את הגורמים הקשורים להיענות להוראות בריאות של מגזרים שונים בעת משבר בריאות חריף ודינאמי. המחקר מתמקד בהשפעת סוג המסר, זהות

מעבירו והערוץ בו הוא מוצג, לצד משתנים נוספים המוכרים כקשורים להיענות להוראות בעת שגרה. כך, מחקר זה עשוי לסייע לקובעי מדיניות בהגברת שיעורי היענות להוראות בריאות בעת משבר בריאות חריף.

3. שיטות המחקר: שלושה סקרי-ניסוי בוצעו בקרב אזרחים ישראלים בגירים מהמגזר הערבי, החרדי והאוכלוסייה היהודית הכללית. הניסויים בוצעו בנקודות זמן המייצגות חומרת משבר שונה (על בסיס מספר החולים במצב קשה על פי נתוני משרד הבריאות): ניסוי 1: אוקטובר 2020 (807 חולים קשה; N=614), ניסוי 2: דצמבר 2020 (432 חולים קשה; N=1,184) וניסוי 3: נובמבר 2021 (166 חולים קשה; N=953). כל ניסוי בחן שורת משתנים העשויים להיות קשורים לכוונות היענות, כאשר הניסוי הבא אחריו המשיך לבחון את המשתנים שנמצאו רלוונטיים והשמיט את המשתנים האחרים. בכל הניסויים הוצגו למשתתפים הוראות בריאות מדומות שונות (כל נבדק צפה בהוראה אחת בלבד) בשם משרד הבריאות / ממשלת ישראל, בעלות מאפיינים שונים על פי המשתנים שנשלטו בניסוי. הנבדקים חולקו באופן אקראי לכל אחד מתאי הניסוי ונתבקשו לציין את כוונות היענותם להוראות אלו. כמו כן, נמדדו שורה של משתנים פסיכולוגיים (כגון, תפיסות סיכון, יתרונות של ההוראות וחסמים לביצוען) ופוליטיים (כגון אמון בממשלה) ובוצע ניתוח בין נבדקי. בניסוי 1 הוצגו שתי הוראות: חובה לעטות משקף מגן במקומות ציבוריים בנוסף למסכה וכן עוצר כללי בעוד שלושה ימים. ניסוי זה בחן את השפעתם של סוג המסר (מפחיד/ ניטרלי/ אמפאטי) ומעביר המסר (בירוקרט/ פוליטיקאי/ פוליטיקאי מגזרי). בניסוי 2 הוצגו אותן הוראות ונבחנה השפעתם של הערוץ (מסורתי/ מדיה חברתית) ומעביר המסר (בירוקרט/ פוליטיקאי). בניסוי 3 נבחנה מוכנות להיענות להוראת בריאות אודות התחסנות נגד קורונה מדי חצי שנה. המחקר בחן את השפעתה של מידת המעורבות והשליטה של הממשלה באופן בו ניתנה ההוראה (הוראה מחוייבת בחוק/ תמריץ שלילי/ תמריץ חיובי/ מידע בלבד), וכן את השפעתם של חסמים שונים (בטיחות, פסיכולוגיים, לוגיסטיים, פיזיים, תפיסת קוהרנטיות ותחושת "פראייר") על הכוונה להיענות להוראה זו.

4. ממצאים: מסיכום ממצאי שלושת הניסויים עולה כי לא נמצא הבדל מובהק בין-מגזרי בגורמים המשפיעים על כוונות היענות להוראות הבריאות. עבור כל המגזרים, המשתנים שנמצאו קשורים לכוונות היענות הם: יתרונותיהן הנתפסים של ההוראות הבריאות, החסמים ותחושת החוללות

(המסוגלות) לבצען. כלומר, ככל שההוראות נתפסו כבעלות יתרונות רבים יותר, בעלות רמות חסמים מעטות יותר ותחושת מסוגלות עצמית לביצוען גבוהה יותר, כך הכוונות לבצען היו גבוהות יותר. המשתנים שנמצאו בכל המגזרים כלא קשורים להיענות להוראות הבריאות הם: סוג ומעביר המסר, ערוץ העברתו, חומרת המשבר, הסיכון הנשקף ממנו, מידת מעורבות הממשלה ואמון בממשלה.

5. מסקנות: מגזרים שונים מושפעים באופן זהה ממשתנים הקשורים לכוונות היענות להוראות בריאות בעת משבר רפואי חריף ומתמשך. בשונה מהמצופה, משתנים המוכרים ככאלו העשויים לשפר כוונות היענות להוראות בריאות, כגון מידת הסיכון הנתפסת כנשקפת מהמשבר, מידת מעורבות הממשלה, וכן מידת האמון בממשלה לא נמצאו קשורים לכוונות היענות להוראות הבריאות.

6. המלצות למקבלי החלטות: בעת פרסום הוראות בריאות בזמן משבר חריף, מומלץ להשתמש במספר מעבירי מסר, ערוצים וסגנונות, ללא הבדל בין המגזרים השונים. יש להדגיש את יתרונותיהן של ההוראות ואת קלות והיתכנות ביצוען. על הגופים הרגולטוריים לזהות את החסמים לביצוען ולהציע עבורם פתרונות מעשיים. כמו כן, נראה כי אין צורך בהפעלת מערכת תמריצים או כפיה מכל סוג, שכן ניתן להשיג שיעורי היענות זהים גם בעת שימוש במתן מידע לאזרחים בלבד.

(7) מקורות

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Section 5: Comprehensive scientific report – English

1. Scientific background (what is already known)

Public compliance with government's guidelines during a health crisis, is a key factor for containing and managing it (Nese et al., 2020). However, the current Coronavirus pandemic has demonstrated that citizens do not always comply with guidelines and instructions, despite governments' repeated pleading to do so through multiple communication channels and by various public figures (Roma et al., 2020). In particular, the compliance patterns of minority groups have attracted the attention of researchers (Goren et al., 2021; Lavie et al., 2020; Slobodin & Cohen, 2020), health authority representatives (Rabinowitz, 2020) and the media (Dalsheim, 2020; Silverstein, 2020) as some communities seem less likely to comply than others (Goren et al., 2021; Waitzberg et al., 2020; Yancy, 2020).

Some scholars explain this variance in public compliance by cultural and socio-economic antecedents (Goren et al., 2021; Waitzberg et al., 2020). It is also suggested that since trust in government is considered a prime predictor of compliance with health instructions (e.g., Blair et al., 2017; Howlett et al., 2020; van der Weerd et al., 2011), and since minority social groups often trust the government less than the majority group (Goren et al., 2021), their low compliance may be due to low levels of trust in the government.

However, these socio-political explanations should be considered in the wider perspective of compliance and behavior adoption literature and the factors it suggests as predicting compliance. For example, persuasion theory as well as media effects literature, suggest that "peripheral" factors, such as message type, the identity (qualities) of the message conveyer and the channel through which the message is conveyed may enhance adoption of advocated behaviors and guidelines (Petty & Cacioppo, 1986; Worchel et al., 1975). Furthermore, classic motivation literature, such as the Self-Determination Theory (Frey & Jegen, 2001; Frey & Oberholzer-Gee, 1997) suggests that the level of control and intervention in citizens choice and autonomy, as reflected in government policies and guidelines, can affect the willingness to comply with these instructions, with high levels of control undermining compliance intentions. Nonetheless, some strands of psychological literature, such as the Compensatory Control Model (Kay et al., 2008;

Landau et al., 2015), suggest that instabilities in an individual's sense of control, which may depend on the level of severity of a crisis, may affect his/her acceptance levels of various controlling and strict policies.

The most commonly used theoretical framework for predicting adoption of health behavior is the Health Belief Model (HBM; Dyda et al., 2020; Janz & Becker, 1984; Rosenstock, 1974), which in essence, builds upon the rational and utilitarian nature of individuals. According to the HBM, individuals will adopt health guidelines when they perceive their benefits to outweigh their costs or risks. The model suggests that the perceived risk for contracting the disease and the severity of its consequences, together with the perceived benefits of the promoted behavior, as well as the perceived self-efficacy to perform it enhance the chances of adopting it. On the other hand, the perceived barriers and disadvantaged for adopting it decrease them.

The mentioned above explanations for variance in public compliance may account for variance in perceptions of health instructions' costs and benefits. However, the unique socio-political features of minority social groups may change these effects and the way they affect compliance intentions (CI; Goren et al., 2021). Furthermore, the unprecedented nature of the Coronavirus global pandemic may thwart rational considerations and alter cost and benefits perceptions (Sanders et al., 2021).

These multiple theoretical frameworks and presumably compliance-enhancing variables, stress the need to empirically examine the suggested explanations and interacting effects on public compliance with health guidelines. This is particularly important during an unprecedented on-going and dynamic global health crisis, such as the current Coronavirus pandemic (Dennis & Wheaton, 2021; Elemo et al., 2021; Rettie & Daniels, 2020), in which public compliance is crucial for mitigating the pandemic and reducing morbidity and mortality rates (Nese et al., 2020). To the best of our knowledge, no previous work has done so.

2. **Research objectives** (what does the work intends to solve)

This study aims to identify the factors that may predict compliance of different social groups with government issued health instructions, during an on-going and dynamic health crisis. More specifically, it examines how different social groups respond to government health instructions when they are presented via different channels, by

different conveyers, composed of different message types, during different levels of crisis severity. In addition, we aim to examine whether variance in compliance during a severe and on-going crisis can be explained by the classic HBM (Janz & Becker, 1984; Rosenstock, 1974).

By doing so, this work may assist policy makers in enhancing public compliance rates, by adjusting and adapting the peripheral and tactical aspects of policies that require mass cooperation of all social groups in on-going health crises. Second, this study may contribute to persuasion and policy design literature by offering a more comprehensive perspective for predicting compliance, by suggesting and examining the effects of channels, conveyers, message types and severity of crisis on the compliance of different social groups with government health instructions and policies.

3. Methodology

Following the approval of the ethics committee of the Social Sciences faculty of the University of Haifa (#292/20), we performed 3 on-line factorial survey experiments with a total of 2,751 Israeli participants from the Arab, Ultra-Orthodox (UO) and the general Jewish communities, during October 2020 (EXP1; N=614) December 2020 (EXP2; N=1,184) and November 2021 (EXP3; N=953). These points in time represent different levels of the pandemic severity, where October 2020 demonstrates higher severity levels than December 2020 and November 2021, based on the number of severe morbidity cases, as published by the Israeli Ministry of health¹.

The design of the experiments was formalized in a progressive manner. That is, we used each experiment as an exploratory indicator of relevant factors which could be further explored (or omitted) in the next experiment. This strategy was necessary given the difficulty in sampling minority groups in Israel (Gordoni & Schmidt, 2010; Kalagy, 2020) and the need to cross examine multiple factors and conditions, which otherwise would have exhausted the available pool of participants. Following this practice, in all the experiments, participants were presented with different vignettes (one per participant) with simulated governments instructions and an inter-factorial combination of the different levels of the examined

¹ <https://datadashboard.health.gov.il/COVID-19/general>
2020

factors in each experiment. Next, participants were asked to report their intentions to comply with the presented instruction.

We chose to explore CI with simulated instructions and not self-reported actual behavior for two main reasons. First, we wanted to examine acceptance of new health directives amidst an on-going crisis. Second, we wanted to avoid social desirability effects, which are particularly strong when participants are asked to state whether they comply with existing normative laws and rules (Bradburn et al., 1978; Gonzalez-Ocantos et al., 2012; Krumpal, 2013; Richman et al., 1999; Tourangeau & Yan, 2007). Given certain similarities between experiments 1 and 2, they will be described together and experiment 3 will be presented next.

Experiments 1 and 2

In the first two surveys, each vignette demonstrated a different combination of the following factors: type of instruction, message type, message conveyer, and channel. The specific levels of the factors were adjusted to match the characteristics of the social groups. For example, since television sets are banned in the UO community, UO participants were presented with a transcript of a radio news report (see Appendix A for the inter-factorial combinations used in each experiment).

Sample

Adult (18+) participants were recruited via two survey companies and were offered a reward of about \$5-6 (U.S., 20 NIS) for their participation. The sample was composed of members of the general Jewish population ($N_{EXP1}=218$; $N_{EXP2}=617$), the UO minority ($N_{EXP1}=194$; $N_{EXP2}=302$) and the Arab minority ($N_{EXP1}=202$; $N_{EXP2}=265$). The general population sample was stratified by age, gender, income and residence area. The other samples were aimed to be stratified by age and gender alone. See sample demographics in Appendix B.

Procedure

All three social groups were presented with an identical experimental procedure and questionnaire. The Arab group's questionnaire and vignettes were backwards translated to Arabic by two Arabic native speaking researchers. Following an informed consent, participants were presented with a battery of questions assessing their wellbeing and levels of depression, anxiety and stress. Next, in each of the social groups, participants were randomly allocated to the experimental cells in which unique vignettes were presented to them, demonstrating one of two types of

instructions simulated to be newly issued by the Israeli Ministry of Health. These instructions were (1) a mandatory use of an eye protector in addition to a face mask in public places OR (2) an instruction to stay at home during a week-long general lockdown that will begin in three days. These instructions were selected in order to simulate two levels of control/ strictness with "stay-at-home" representing the more controlling instruction, and the "mandatory eye protector in public places" instruction as the less controlling instruction (Nuffield Council on Bioethics, 2007). The instructions were simulated to be presented by different conveyers, via different channels and message types as described in appendix A. All in all, EXP1 included 14 experimental cells (General=6; Arab=4; UO=4) and EXP2 included 24 experimental cells (General=12; Arab=6; UO=6). This was followed by an attention check that made sure the participants have read and understood the content of the vignettes before allowing them to move on with the questionnaire.

Then, participants were asked to report their intentions to comply with the simulated instructions. This was followed by a series of questions aimed to tap into the main factors of the Health Belief Model (Janz & Becker, 1984; Rosenstock, 1974). This included measures regarding perceptions of the effectiveness/ benefits of the advocated behavior, the barriers that may prevent participants from adopting the instructions, the perceived medical risk posed to them by the pandemic and perceived self-efficacy for performing the instructions. We also measured the perceived severity of the crisis, knowledge about the Coronavirus, and several political and civic variables that may predict compliance with government policies, such as the level of trust in the government, political efficacy, compliance with previously issued government health instructions and predicted compliance levels of other citizens. The survey was concluded with demographic questions which were followed by a debriefing that stressed that the presented instructions were bogus.

Measures

The applied measures are listed below. See appendix C for their full description.

Dependent variable: Compliance intentions; Independent variables: Perceived benefits of the promoted behavior; Barriers for health behavior adoption: physical, psychological and logistic; Risk perceptions about the virus; Perceived self-efficacy for performing health guidelines; Perceived crisis severity; Knowledge about the virus; Trust in government; Internal and external political efficacy; Compliance with

previously issued government health instructions; Predicted compliance levels of other citizens; instruction type; message conveyer, message type (EXP1); Conveyance channel (EXP2) Control variables: Wellbeing; DASS-21: Depression anxiety and stress; Demographic variables: gender, age, parenthood, education, income.

Experiment 3

Given the results of EXP1 and EXP2 which suggested possible effects of the level of government intervention and of some barriers for performing the instruction (see elaborated results in the findings chapter), in EXP3 we focused on two main factors: (1) governments' level of intervention when setting the health guidelines (i.e., compulsory instruction, negative incentive, positive incentive and information) and (2) barrier types for compliance with health guidelines. This experiment was conducted during November 2021, about 20 months after the initial Coronavirus outbreak in Israel. At this point in time, the severity of the pandemic has decreased², mostly due to the availability of the COVID-19 vaccines, which was lacking in the first two experiments, and the successful vaccination roll-out campaign in Israel. The survey was conducted amidst the campaign for the booster shot. In addition to the findings of the previous experiments, we considered this context as well when designing the experiment's procedure.

Sample

953 adult participants were recruited and rewarded via a survey company in the same manner as the previous experiments. They composed a representative sample of the Israeli population with regards to gender, age, residence area and sector (including the Arab and UO groups). See Appendix B for the demographic features of the sample.

Procedure

For this experiment, we designed a simulated "new" health instruction that would seem plausible and suitable for the context which the survey was held in (i.e. a prolonging pandemic for almost 2 years and a public campaign for vaccine booster shots): an instruction to get a COVID-19 vaccination booster shot every 6 months. First, the participants were randomly allocated to one of 4 experimental cells which represented 4 levels of government intervention in public choice to adopt health

² <https://datadashboard.health.gov.il/COVID-19/general>
2020

behavior (Nuffield Council on Bioethics, 2007). In each cell participants were presented with one vignette showing one of the following government intervention levels as simulated transcribed radio news reports: (1) mandatory vaccination (no choice); (2) a negative incentive: a 50% increase in the health tax for those who will not vaccinate every 6 months; (3) a positive incentive: a 50% decrease in the health tax for those who will vaccinate every 6 months and (4) information provision regarding a new study performed by researchers in the Israeli ministry of health, which concluded that a booster shot is needed every 6 months. Next, participants were asked to state their intention level to get vaccinated every 6 months. This was followed by questions measuring 6 dimensions of barriers for adopting this behavior, and additional components of the Health Belief Model (Janz & Becker, 1984; Rosenstock, 1974). We also measure some civic and personality-related variables and basic demographics.

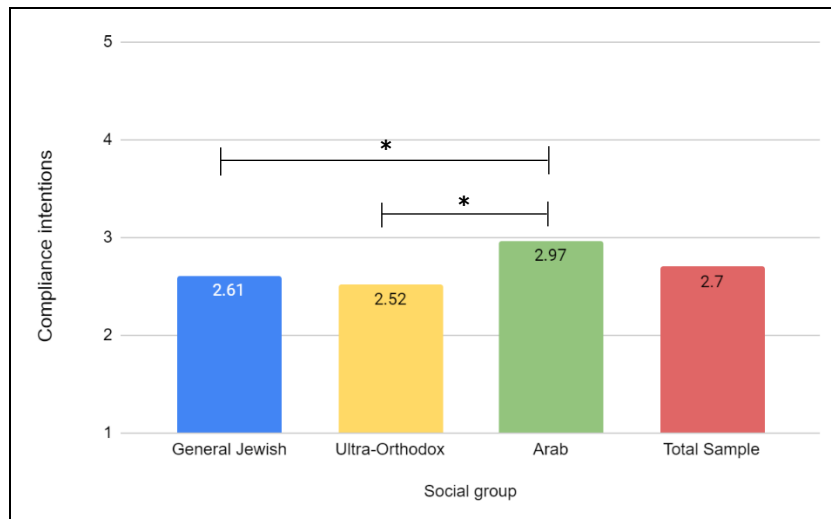
Measures

The applied measures are listed below. See appendix C for their full description. Dependent variable: Compliance intentions; Independent variables: Government intervention level; Perceived benefits of the promoted behavior; Barriers: safety, psychological, logistic, physical, coherence, "sucker effect"/ perceived loafing; self-efficacy for performing the promoted behavior; Perceived Severity and Susceptibility of the disease and contracting it; Social norms of compliance with the promoted behavior; Trust in government; Control variables: Agreeableness; Self-efficacy (general); Previous contraction of COVID-19; Previous vaccination against COVID-19; Demographic variables: gender, age, parenthood, education, income.

4. Findings

Experiment 1:

Compliance intentions: the mean CI levels were medium ($M=2.7$; $SD=1.38$, on a 1-5 scale). The Arab group showed the highest levels ($M=2.97$; $SD=1.34$), and the UO group the lowest ($M=2.52$; $SD=1.4$). A one-way ANOVA and a Bonferonni post hoc analysis indicated that the CI of the Arab group were significantly higher than those of the UO and the general groups ($F_{(2)}=6.19$; $p<0.01$), but there was no significant difference between the two Jewish groups. See figure 1.

Figure 1: Compliance intentions in social groups in EXP1

* $p < 0.05$

Message type: we examined whether fear inducing, empathic or neutral messages had a different effect on CI in the general Jewish population alone, in a single message conveyer (bureaucrat- the general manager of the ministry of health) and a single instruction (mandatory use of eye protector in public places). A one-way ANOVA indicated that although the neutral message had a higher CI rate ($M=2.77$; $DS=1.4$) than the fear inducing and empathic messages ($M=2.3$; $DS=1.3$ and 2.45 ; $DS=1.32$ respectively), this difference was only marginally significant ($F_{(2)}=2.43$; $p=0.09$). Therefore, we did not include this factor in the following experiments.

Instruction type: the effect of type of instruction on compliance intention was explored in all three social groups, but was conveyed only by the Prime minister (a politician). A T-Test indicated that the lockdown instruction had a significantly higher CI ($M=3.60$; $SD=1.24$) than the eye protector instruction ($M=2.42$; $SD=1.31$; $t_{(612)}=9.60$; $p<0.001$). A Univariate ANOVA indicated that this difference was similar across all social groups and there was no interaction effect between the type of instruction and social group on CI. In order to examine a possible interaction effect between the type of instruction and the type of message conveyer, we further examined the effect of instruction type in the next experiment.

Message conveyer: all the participants were presented with vignettes in which instructions were conveyed either by the prime minister (a politician) or the general manager of the ministry of health (a bureaucrat). In the Arab and the UO groups a third conveyer was introduced: a sectorial politician. A T-Test in the general group and a one-way ANOVA with Bonferroni Post-Hoc analysis in the Arab and UO

groups indicated that in all three social groups, an instruction conveyed by the prime minister yielded the highest CI. However, this was significant only in the two Jewish groups (General: Prime minister - $M = 3.09$, $SD = 1.38$; Bureaucrat- $M = 2.3$, $SD = 1.29$; $t_{(216)} = -4.25$; $p < 0.001$; UO: Prime minister - $M = 2.84$, $SD = 1.4$; Bureaucrat- $M = 2.09$, $SD = 1.19$; Sectorial politician- $M = 2.28$, $SD = 1.45$; $f_{(2)} = 6.03$; $p < 0.01$). In the Arab group there was no significant difference in the CI induced by different conveyers (Arab: Prime minister - $M = 3.13$, $SD = 1.37$; Bureaucrat- $M = 2.86$, $SD = 1.38$; Sectorial politician- $M = 2.75$, $SD = 1.2$; $f_{(2)} = 1.57$; $p = N.S.$). Hence, we expanded the examination of the conveyer factor in EXP2.

Multivariate analysis: we performed a multiple hierarchic regression analysis aiming to examine if any of the factors had an effect on CI above and beyond the other factors, and whether social group affiliation moderated any of these relationships. We ran 7 OLS regression models on CI as a dependent variable (see table 1). Model 1 included the demographic variables. In Model 2 we added the variables which were previously found or assumed to be associated with compliance. In Model 3 and 4 we consecutively added the instruction type and the conveyer, as our preliminary analysis revealed some associations between them and CI. The conveyer factor was converted to a dichotomous variable indicating whether the conveyer was the Prime minister or not, since the preliminary analysis did not indicate any significant differences in compliance intention between the other conveyers. Model 5 included the social groups, with the General Jewish as a reference group. In Models 6 and 7 we separately (NOT consecutively) added the interaction terms between social group and conveyer and social group and instruction type. As model 2 demonstrates, not all the HBM variables indeed predict CI. While perceived effectiveness/benefits of the behavior and self-efficacy to take protective measures were positively correlated with CI, risk perceptions were not associated with CI. Furthermore, while physical and technical barriers were negatively associated with CI, psychological barriers were not. Trust in government was not associated with CI as well. As Model 3 shows, the instruction type was NOT associated with CI above and beyond other variables. Models 4 and 5 indicate the same findings regarding conveyer and social group affiliation respectively. As models 6 and 7 indicate, there was no significant interaction between social group and conveyer and social group and instruction type. In other words, members of all groups were affected to the same extent by message conveyers and different

instructions, namely responding more positively to the lockdown instruction, regardless of the identity of the conveyer.

Table 1: Results of an OLS multivariate regression analysis of compliance intentions (DV) and interactions with social group in experiment 1

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
(Constant)	2.380 ^c	.226	.657 ^a	.657	.722 ^a	.296	.726 ^a	.304	.632 ^a	.312	.540	.316	.744 ^a	.319
Gender	-.048	.124	-.054	-.054	-.049	.063	-.049	.063	-.053	.063	-.048	.063	-.050	.064
Age	.009 ^a	.004	-.001	-.001	-.001	.002	-.001	.002	.000	.002	.000	.002	-8.868E-5	.002
Parenthood	-.012	.141	.008	.008	.008	.070	.009	.071	.007	.072	.011	.072	.008	.072
Education	.023	.042	-.010	-.010	-.010	.021	-.010	.021	-.019	.022	-.014	.022	-.015	.022
Income	-.037	.051	.003	.003	.001	.026	.001	.026	.011	.026	.006	.027	.009	.026
Wellbeing			-.003	-.003	-.003	.002	-.003	.002	-.003	.002	-.003	.002	-.003	.002
DASS-21			-8.317E-5	-8.317E-5	.000	.003	-9.825E-5	.003	.000	.003	.000	.003	.000	.003
Benefits			.236 ^c	.236	.228 ^c	.029	.228 ^c	.029	.226 ^c	.030	.227 ^c	.030	.225 ^c	.030
Barriers-Physical			-.025	-.025	-.025	.013	-.025	.013	-.023	.013	-.023	.013	-.023	.013
Barriers-Mental			.013	.013	.013	.012	.013	.012	.012	.012	.013	.012	.013	.012
Barriers-Technical			-.017	-.017	-.019	.010	-.019	.010	-.020	.010	-.017	.011	-.018	.011
Perceived risk			-.031	-.031	-.027	.040	-.027	.040	-.028	.041	-.029	.041	-.030	.041
Perceived crisis severity			-.006	-.006	-.006	.014	-.005	.014	-.003	.014	-.004	.014	-.003	.014
Knowledge			.001	.001	.003	.023	.003	.023	.003	.023	.005	.023	.003	.023
Trust in GOV			.000	.000	.000	.001	.000	.001	.000	.001	.000	.001	.000	.001
Political efficacy- IN			.018	.018	.017	.033	.018	.033	.023	.033	.024	.033	.022	.033
Political efficacy- EX			.011	.011	.014	.044	.014	.044	.016	.044	.016	.044	.016	.044
Mask			-.003	.002	-.003	.002	-.003	.002	-.002	.002	-.002	.002	-.002	.002
Distance			.002	.002	.002	.002	.002	.002	.003	.002	.002	.002	.002	.002
Hygiene			.002	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Self-efficacy			.573 ^c	.029	.570 ^c	.029	.570 ^c	.029	.569 ^c	.029	.573 ^c	.029	.573 ^c	.029
Others' compliance			.006 ^b	.002	.005 ^b	.002	.005 ^b	.002	.005 ^b	.002	.005 ^b	.002	.005 ^b	.002
Instruction [‡]					-.071	.083	-.074	.099	-.084	.100	-.077	.100	-.241	.140
Conveyer [†]							-.005	.076	-.015	.077	.110	.109	-.021	.077
Sector-OU									.061	.081	.189	.105	-.168	.152
Sector-Arab									.130	.088	.158	.113	-.015	.162
Sector-OU x Conveyer											-.281	.146		
Sector-Arab x Conveyer											-.108	.151		
Sector-OU x Instruction													.301	.168
Sector-Arab x Instruction													.175	.178
R ² ΔR ²	.013	.013	.778	.765 ^c	.778	0	.778	0	.779	.001	.781	.002	.780	.001

N=525; ^ap<0.05, ^bp<0.01, ^cp<0.001; **Note:** UO – Ultra-orthodox; Reference group: General population;

[‡] 1=Eye protector, 0=Lockdown; [†] 1=Prime minister, 0=Other conveyers

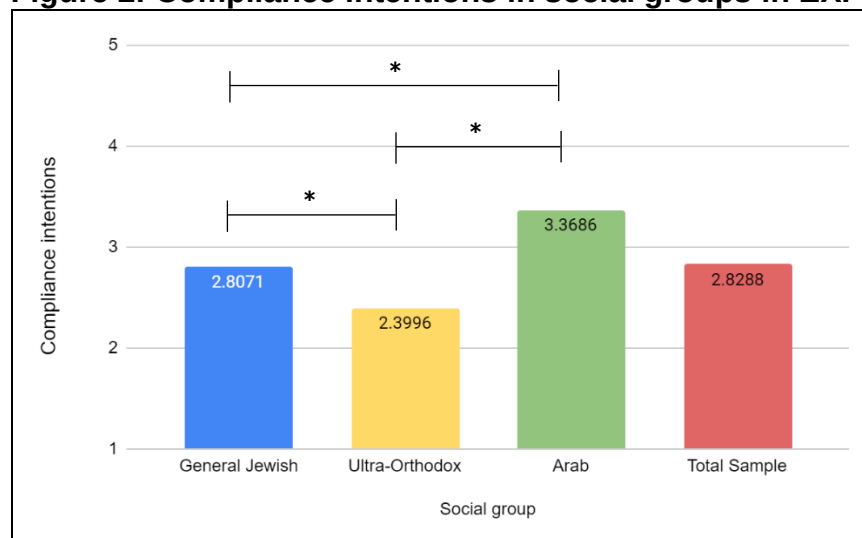
Experiment 2:

Given the findings of EXP1, in this experiment we examined the effects of type of

instruction and message conveyer. We also explored the effect of the channel through which the message was conveyed.

Compliance intentions: the mean CI levels were medium ($M=2.83$; $SD=1.41$). The Arab group and the UO group continued to demonstrate the highest and lowest levels respectively (Arab: $M=3.37$; $SD=1.39$; UO: $M=2.4$; $SD=1.3$). A one-way ANOVA with a Bonferonni post hoc analysis indicated that the CI of all the groups were significantly different from each other ($F_{(2)}=35.24$; $p<0.001$). See figure 2.

Figure 2: Compliance intentions in social groups in EXP2



* $p<0.05$

Channel: The channel factor was examined only in the general Jewish group. Participants in this group were either presented with a simulated news report on a news website or with a fake Facebook post presented to be published by the conveyers on their official Facebook page. A T-Test performed in the general Jewish group indicated no significant difference in CI, between participants in different channel groups. Simply put, participants responded to the instructions in the same way regardless of the medium in which they viewed them. Therefore, we did not further explore this factor in the following experiment.

Message conveyer: participants from all social groups were presented with instructions that were conveyed either by the prime minister (politician 1), the general manager of the ministry of health (bureaucrat) or the minister of health (politician 2). We added the latter conveyer to this experiment aiming to explore whether the prime minister's stronger effect on CI that was registered in some cases in the EXP1 survey, was due to him being head of state or a politician. By adding the minister of health – another politician - we could examine whether

politicians in general have a stronger effect on CI than bureaucrats. This survey did not include a sectorial politician, since the previous study indicated this figure to be irrelevant for predicting CI.

A one-way ANOVA with Bonferroni Post-Hoc analysis indicated that in all three social groups, there was no significant difference in CI levels depending on message conveyers. A Univariate ANOVA indicated no interaction effect between the message conveyer and social group on CI. In other words, all social groups complied with instructions conveyed by different conveyers to the same extent. Therefore, we did not further investigate this factor in the next experiment.

Instruction type: the effect of type of instruction on compliance intention was explored in all three social groups, and was conveyed by all three conveyers. Much like in the previous survey, a T-Test indicated that the lockdown instruction had a significantly higher CI ($M=3.52$; $SD=1.24$) than the eye protector instruction ($M=2.14$; $SD=1.22$; $t_{(1,182)}=19.19$; $p<0.001$) in the overall sample. A Univariate ANOVA indicated that this difference was similar across all social groups and there was no interaction effect between the type of instruction and social group on CI. These similar and consistent findings across both experiments led us to further explore whether and how the features of the instruction may explain the higher CI with instructions and policies that seem stricter and more controlling.

Multivariate analysis: as in experiment 1, we performed a multiple hierarchic regression analysis aiming to examine if any of the factors had an effect on CI above and beyond the others, and whether social group affiliation moderated any of these relationships. We did not include in our analysis the channel and the conveyer, as they were found to be un-associated with CI in neither of the social groups. We ran 5 OLS regression models on CI as a dependent variable (see table 2).

Model 1 included the demographic variables. In Model 2 we added the variables which were previously found or assumed to be associated with compliance. In Model 3 we added the instruction type, as our preliminary analysis revealed it was associated with CI. Model 4 included the social groups, with the General Jewish as a reference group. In Model 5 we added the interaction terms between social group and instruction type.

Similar to the results in EXP1, model 2 in table 2 shows that not all of the HBM indeed predicted compliance intentions. Again, while the perceived

effectiveness/benefits of the promoted behavior and the self-efficacy to perform the promoted behavior were positively correlated with CI, risk perceptions were not. Furthermore, among the barriers, only the physical ones were negatively associated with CI. Trust in government was not associated with CI in this experiment as well. These consistent findings across both experiments were further explored in EXP3.

As Model 3 shows, the instruction type was significantly associated with CI, but its contribution to the explained variance of the model was minor. Model 4 indicates that social group affiliation did have a significant association with CI above and beyond other variables, but only between the Arab and the other two groups (we repeated the same analysis only with the Arab sector as a reference group. Both dummy variables representing the general Jewish group and the OU group were found to be significantly less compliant than the Arab group). Model 5 indicates a significant interaction effect between social group and instruction type, since the dummy variable representing the interaction term between instruction type and the Arab sector was significantly different than the general group. However, this interaction effect had a slim contribution to the explained variance of this model (R^2 change=0.002). Given that our preliminary and parsimonious ANOVA found this interaction effect insignificant, we can safely assume that the significant effect of the interaction in the larger model is due to the statistical effects of multiple variable analysis.

Table 2: Results of an OLS multivariate regression analysis of compliance intentions (DV) and interaction with social group in experiment 2

		Model 1		Model 2		Model 3		Model 4		Model 5	
		B	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
(Constant)		2.272 ^c	.204	.658 ^a	.291	.867 ^b	.290	.657 ^a	.295	.660 ^a	.296
Gender		-.132	.093	-.076	.062	-.058	.061	-.025	.061	-.035	.061
Age		.015 ^c	.003	-.002	.002	-.002	.002	.000	.002	.000	.002
Parenthood		-.021	.093	.055	.060	.052	.059	.016	.060	.019	.060
Education		.018	.036	-.010	.023	-.007	.023	-.017	.023	-.019	.023
Income		.000	.038	-.026	.024	-.031	.024	.006	.025	.007	.025
Wellbeing				.000	.002	-2.814E-5	.002	.000	.002	.000	.002
DASS-21				.003	.003	.004	.003	.004	.003	.004	.003
Benefits				.481 ^c	.025	.423 ^c	.027	.425 ^c	.027	.420 ^c	.027
Barriers-Physical				-.047 ^c	.012	-.043 ^c	.012	-.035 ^b	.012	-.036 ^b	.012
Barriers-Mental				-.008	.012	-.006	.012	-.007	.011	-.010	.011
Barriers-Technical				-.015	.009	-.028 ^b	.009	-.030 ^b	.009	-.030 ^b	.009
Perceived risk				.007	.039	.036	.039	.021	.039	.028	.039
Perceived crisis severity				.015	.014	.015	.013	.017	.013	.015	.013
Knowledge				.039	.023	.042	.023	.037	.022	.038	.022
Trust in GOV				.000	.001	.001	.001	.002	.001	.002	.001
Political efficacy- IN				.008	.029	.013	.029	.019	.028	.017	.028
Political efficacy-EX				-.039	.044	-.021	.044	-.025	.043	-.025	.043
Reported compliance	Mask			.001	.002	.001	.002	.002	.002	.002	.002
	Distance			.001	.001	.001	.001	-6.742E-5	.001	-6.580E-5	.001
	Hygiene			.001	.001	.002	.001	.002	.001	.002	.001
Self-efficacy				.080 ^a	.039	.090 ^a	.038	.083 ^a	.038	.081 ^a	.038
Others' compliance				.016 ^c	.001	.014 ^c	.001	.013 ^c	.001	.013 ^c	.001
Instruction [‡]						-.399 ^c	.077	-.410 ^c	.076	-.343 ^c	.094
Sector-OU								.155	.082	.135	.110
Sector-Arab								.457 ^c	.080	.615 ^c	.108
Sector-OU x Instruction										.030	.139
Sector-Arab x Instruction										-.325 ^a	.147
R ² ΔR ²		.023 ^b	.023	.621 ^c	.599	.632 ^c	.011	.645 ^c	.013	.647	.002

N=946; ^ap<0.05, ^bp<0.01, ^cp<0.001; Note: UO – Ultra-orthodox; Reference group: General population; [‡] 1=Eye protector, 0=Lockdown;

Inter-experiment analysis

Aiming to explore any effects of objective crisis severity on CI, we conducted an OLS regression on the data collected in both of the experiments altogether, as EXP1 represents greater crisis severity than EXP2. We included in the analysis all the variables that were measured and found relevant in both of the experiments while adding the time of data collection (experiment 1/2) as another independent

variable representing the objective severity of the crisis. Next, we checked for any interaction effects between the time of data collection and the other variables. We report here the significant results we found. As table 3 shows, the objective severity of the crisis did not affect CI levels. Further interaction analysis did not reveal any significant effects of the time of data collection and the other variables. Considering these findings, we decided not to further explore objective crisis severity in the next experiment.

Table 3: results of an OLS regression analysis of compliance intentions in experiments 1 and 2

Dependent variable: Compliance intentions	B	S.E.
(Constant)	.909 ^b	.269
Gender	-.056	.049
Age	.000	.002
Parenthood	.041	.049
Education	-.020	.018
Income	.007	.020
Wellbeing	-.001	.001
DASS-21	.003	.002
Benefits	.455 ^c	.021
Barriers-Physical	-.034 ^b	.010
Barriers-Mental	-.010	.009
Barriers-Technical	-.040 ^c	.008
Perceived risk	.022	.031
Perceived crisis severity	.010	.011
Knowledge	.040 ^a	.018
Trust in GOV	.001	.001
Political efficacy- IN	.024	.023
Political efficacy-EX	-.019	.034
Reported compliance	Mask	.002
	Distance	.002
	Hygiene	.001
Others' compliance	.013 ^c	.001
Instruction†	-.354 ^c	.062
Sector-OU	.119	.064
Sector-Arab	.362 ^c	.064
Time of data collection†	-.011	.052
R ²	.627 ^c	

N=1,471; ^ap<0.05, ^bp<0.01, ^cp<0.001; Note: UO – Ultra-orthodox; Reference group: General population; † 1=Eye protector, 0=Lockdown; † 2=EXP1, 3=EXP2

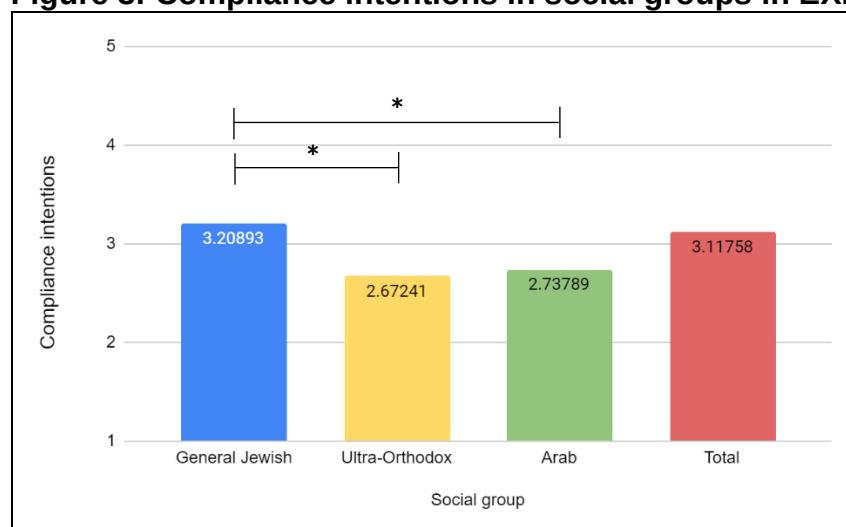
Experiment 3:

Following our research strategy and the findings of the previous experiments, this

experiment focused on two main factors: (1) the level of government intervention in citizens choice to perform the promoted behavior, as manifested in the policy it chooses to apply; (2) the *types* of barriers that may hamper CI. Furthermore, the simulated instruction in this experiment focused on vaccination.

Compliance intentions: The overall CI score was higher than the ones registered in the previous experiments ($M=3.12$; $SD=1.4$). The highest rate of compliance was registered this time by the general Jewish population ($M=3.21$; $SD=1.39$), followed by the Arab and the UO groups (Arab: $M=2.74$; $SD=1.47$; UO: $M=2.67$; $SD=1.45$). A one-way ANOVA with a Bonferonni post hoc analysis indicated that the CI of the general Jewish group was significantly different from the other groups but there was no significant difference between the Arab and the UO groups ($F_{(2)}=8.85$; $p<0.001$). See figure 3.

Figure 3: Compliance intentions in social groups in EXP3



* $p<0.05$

Instruction's features - Government intervention: we explored the effect of the level of the government's intervention in citizens' choice and autonomy to perform the promoted behavior, as manifested in the policy accompanying instruction, using a one-way ANOVA which compared the mean CI score between the 4 groups: 3 groups of different instructions and 1 group of information provision. While the group that saw the vignette which simulated an instruction accompanied by a negative incentive demonstrated the highest average intention to comply ($M=3.21$; $SD=1.41$), and the group that was allocated to the information provision condition demonstrated the lowest average intention to comply ($M=2.98$; $SD=1.43$), the difference between the means was insignificant ($F_{(3)}=1.35$; $p=N.S.$). This result persevered even when all three groups in which an instruction was presented were

joint together and compared against the information group ($t_{(951)}=1.62$; $p=N.S.$). Interestingly, this indicates that the level of government intervention, and the type of incentive as well, are not related with intentions to comply with the promoted behavior. A Univariate ANOVA indicated no interaction effect between social group affiliation and the level of government intervention on CI.

Multivariate analysis: we performed a multiple regression analysis aiming to examine the effect of other variables, and particularly the main ones of the HBM on CI above and beyond the others. We ran 3 hierarchic regression models on CI as a dependent variable (see table 4).

Model 1 in table 4 included the demographic variables. In Model 2 we added the independent variables which are theoretically associated with the HBM. We particularly expanded our investigation regarding the barriers that may affect CI. Given the results of the previous experiments that revealed variance in the effect of different barriers on CI, we measured and analyzed 6 dimensions of barriers (see measures section). In Model 3 we added additional variables that according to previous research may be associated with CI. We did not include the intervention level in the analysis.

Similar to the previous experiments, model 2 showed that not all the HBM variables are indeed associated with CI. Consistently, while the perceived effectiveness/benefits of the promoted behavior and the perceived self-efficacy to perform it were positively correlated with intentions to adopt it, the perceived severity and susceptibility (i.e., perceived risk) were not associated with CI. Furthermore, of all 6 types of barriers, only safety barriers were negatively associated with CI. Model 3 shows that these effects remain significant above and beyond the effect of other related variables such as previous uptake of the COVID-19 vaccine and a supportive environment (social norm) for getting vaccinated every 6 months. Furthermore, just like the other experiments, trust in government was not associated with CI.

In order to examine any sectorial-unique effects, we ran interaction models of sector and all the other variables in the model, but none of which were statistically significant.

Table 4: Results of an OLS regression analysis of compliance intentions in experiment 3

Dependent variable: Compliance intentions	Model 1		Model 2		Model 3	
	B	S.E.	B	S.E.	B	S.E.
(Constant)	1.953^c	.214	2.507^c	.294	1.793^c	.378
Gender	.166	.097	-.077	.058	-.063	.057
Age	.015^c	.004	-.001	.002	-.002	.002
Parenthood	-.094	.100	.006	.058	.035	.057
Income	.146^b	.045	-.014	.026	-.009	.026
Education	.061	.038	.047^a	.022	.045^a	.022
Sector-OU	-.100	.215	.043	.126	.185	.127
Sector-Arab	-.278	.153	.053	.091	.093	.092
Benefits			.402^c	.033	.339^c	.034
Barriers-Safety			-.459^c	.042	-.419^c	.042
Barriers-Psychological			-.030	.041	-.034	.040
Barriers-Logistic			-.012	.039	.007	.039
Barriers-Physical			-.016	.032	-.016	.031
Barriers-Coherence			-.010	.034	.000	.033
Barriers-"Sucker effect"			-.046	.034	-.030	.035
Severity			.045	.039	.030	.039
susceptibility			.059	.040	.055	.040
Self-efficacy to comply			.159^c	.040	.134^b	.040
Agreeableness					.041	.044
General self-efficacy					-.070	.041
Trust in GOV					.002	.001
Previous COVID contraction					.124	.081
Previous COVID vaccination					.289^b	.102
Others' compliance					4.557E-5	.002
Social norms					.006^c	.002
R² ΔR²	.069^c	.069	.688^c	.626	.702^c	.016

N=821; ^ap<0.05, ^bp<0.01, ^cp<0.001; Note: UO – Ultra-orthodox; Reference group: General population;

5. Discussion and Conclusions

Our findings offer several new insights regarding the factors that may and especially may not affect CI with health guidelines during a severe health crisis. First, as EXP1 and EXP2 indicate, contrary to persuasion and media effects literature (Petty & Cacioppo, 1986; Worchel et al., 1975), "peripheral" factors, such as message type (e.g., neutral/ fear inducing/ empathic), the identity of the message conveyer (e.g., bureaucrat/ politician) and the channel through which the message is conveyed (e.g., traditional/ new media) are not significantly associated with CI to perform the

promoted behavior. However, the mere nature of the promoted behavior (e.g., stay-at-home / use an eye protector) does seem to effect intentions to adopt it. While we originally assumed that this was due to a possible tendency to prefer more controlling policies in times of undermined control (i.e. sever crisis), as suggested in the Compensatory Control Model (Kay et al., 2008; Landau et al., 2015), further analysis challenges this explanation. As indicated from the inter experimental analysis of EXP1 and EXP2, the objective severity of the crisis, as inferred by the number of severely ill individuals, did not affect CI with neither of the instructions, and did not interact with the type of instruction as well. This suggests that the Compensatory Control Model (Kay et al., 2008; Landau et al., 2015), may not apply to the current situation. But further analysis regarding subjective and objective crisis severity should be considered. These conclusions apply to all social groups, which implies that any variance in compliance of different social groups cannot be explained by these factors. Second the results of EXP3 reveal that the level of government control over citizens choice to adopt the promoted behavior, or at least getting vaccinated every few months (e.g., mandates, positive incentives, negative incentives, and information), does not affect intentions to comply with the policy and adopt the behavior. This conclusion seems not to align with neither the Self-Determination Theory (Frey & Jegen, 2001; Frey & Oberholzer-Gee, 1997) nor with the Compensatory Control Model (Kay et al., 2008; Landau et al., 2015), since both of these theories attach a crucial impact for the controlling levels of instructions and policies on the willingness to accept and abide them.

These findings suggest that during a health crisis, governments may achieve similar compliance rates by applying policy tools of either high or low intervention levels, ranging from mandates to information provision. This insight may assist policy makers in designing policy packages and strategies that maximize CI while minimizing public expenses and decrease in public trust rates.

Third, as evident from all three experiments, trust in government was not related to CI in neither of the surveys and in neither of the simulated conditions. This conclusion challenges traditional conceptions and theories regarding policy compliance (e.g., Howlett et al., 2020). However, these are not the first evidence of weak to null association between trust in government and compliance with health instructions during the current pandemic (Clark et al., 2020; Goren et al., 2021). We suggest that the unprecedented global magnitude of the pandemic and particularly

the similarities in mitigating policies applied by different governments around the world, may undermine this relationship. Simply put, when citizen realize that many other governments are dealing with the same challenges and take similar measures, their perceptions regarding the trustworthiness of their government are less relevant for determining whether to comply with its instructions or not.

Forth, our study indicates that the HBM, the most popular theoretical framework for analyzing compliance with health guidelines (Dyda et al., 2020), fails to predict CI during a global pandemic (see table 5 for a summary of the associations of main factors with CI in all three experiments). As indicated in all three experiments, risk perceptions of contracting the disease and its medical implications are not associated with willingness to comply with health instructions. However, the perceived efficacy to perform the behavior, the benefits of the behavior, i.e., its perceived effectiveness, and the perceived barriers for performing the behavior, were associated with CI. Furthermore, our findings indicate that not all types of barriers undermine CI at any given time. While in experiments 1 and 2 physical barriers, i.e., the concern regarding pain or inconvenience that may be caused by the advised behavior, decreased CI, in EXP3 safety barriers had the same effect. This may be explained by the different behaviors promoted in the experiments. In other words, it seems that the main barriers for vaccination are ones concerned with the safety of the vaccination, but in other, less intrusive behaviors, physical barriers play a bigger role. Interestingly, in all the experiments, psychological barriers (as well as other barriers measured in EXP3) were not associated with willingness to comply. This suggests more complex relationships between different dimensions of barriers on CI. Different types of promoted behaviors, as well as the duration of the crisis should be further investigated as factors that may affect these relationships.

Table 5: Associations of main factors with compliance intentions

Factor	Experiment 1	Experiment 2	Experiment 3
Perceived benefits	✓	✓	✓
Perceived barriers	✓ Technical & Physical	✓ Physical	✓ Safety
Perceived risk	✗	✗	✗
Self-efficacy	✓	✓	✓
Trust in government	✗	✗	✗

6. Policy Implications and Recommendations

This study suggests the following policy recommendations for enhancing CI with health guidelines during a severe crisis in all social groups:

- (1) Put your eggs in as many baskets: health guidelines can and should be presented to the public in many channels, by politicians and/or bureaucrats and convey either fear inducing, empathetic, or neutral message. In any case, they will contribute to public willingness to adopt the guidelines to the same extent. However, when circumstances do not allow for such extensive coverage and variety, a single message conveyer, a single message type and even a single channel (depending on its ratings and distribution) may be equally effective.
- (2) Benefits and self-efficacy make a difference: policy makers and message conveyers should stress the advantages and benefits citizens may gain from adopting the promoted behavior. This should be accompanied by facilitating supporting conditions for performing it, such as making face masks, hand sanitizers and vaccines available and affordable. The messages should provide detailed information regarding the way the promoted behavior should be carried out while highlighting the simplicity and ease in performing it.
- (3) Detect, address and remove relevant barriers: quick surveys and focus groups should be held as a tool for assessing the relevant barriers that may prevent citizens from performing specific guidelines. The relevant barriers should be acknowledged and addressed when reaching out to the public, while acting on dismantling their generators. For example, if safety issues deter citizens from getting vaccinated, safety aspects and safety regulation should be emphasized.
- (4) Leave out the carrots and sticks: policy designers can avoid unnecessary public expense by choosing not to apply mandates or incentives of any kind, when aiming to promote health guidelines adoption willingness. Information provision can be equally effective, as long as it enhances the benefits of the promoted behavior (see item 2).

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Appendix A: Examined factors and their levels in each of the experiments

Experiment	Factor	Levels	General Jewish population	Arab population	Ulra-Orthodox population
EXP1	Channel ¹	Traditional media	V	V	V
		Social media	X	X	X
	Message	Fear inducing ^a	V	X	X
		Neutral	V	V	V
		Empathic ^a	V	X	X
	Instruction type	Eye protector	V	V	V
		lockdown ^b	V	V	V
	Conveyer	Bureaucrat ²	V	V	V
		Minister of health	X	X	X
		Prime minister	V	V	V
		Sectorial politician ³	X	V	V
EXP2	Channel ⁴	Traditional media	V	V	V
		Social media	V	X	X
	Message	Fear inducing	X	X	X
		Neutral	V	V	V
		Empathic	X	X	X
	Instruction type	Eye protector	V	V	V
		lockdown	V	V	V
	Conveyer	Bureaucrat ²	V	V	V
		Minister of health	V	V	V
		Prime minister	V	V	V
		Sectorial politician	X	X	X

Notes: V – examined factor and level; X – unexamined factor and level; ¹ the traditional medium was a transcript of a TV news report in the general and in the Arab groups and a radio news report in the UO group. ² The simulated conveying bureaucrat was the general director of the ministry of health. ³ in the Arab group the simulated conveyer was a parliament member from the joint Arab party. In the UO group the simulated conveyer was a parliament member from an UO party (the name of the party was concealed ⁴ the traditional medium was a simulated screenshot of a report on a news website in the general and Arab groups and a radio news report in the UO group. The social media cell simulated a screenshot of a Facebook post posted by the conveyer on his official page. ^aThe the fear inducing and empathic messages in the EXP1 experiment were advocated by the general manager of the ministry of health alone only ^bThe lockdown instruction in the EXP1 experiment was advocated by the prime minister alone.

Appendix B: demographic characteristics of the samples in the study

Means and standard deviations of the demographic variables by social group in the three experiments

		General			Arab			Ultra-Orthodox		
		N	Mean	Std.	N	Mean	Std.	N	Mean	Std.
Experiment 1	Gender ¹	218	.53	.500	202	.52	.501	194	.51	.501
	Age ²	218	46.83	18.831	202	32.83	14.504	194	35.81	15.044
	Education ³	218	3.33	1.580	202	3.96	1.225	194	3.57	1.478
	Parenthood ⁴	218	.59	.493	202	.29	.456	194	.58	.495
	Income ⁵	213	2.62	1.332	200	1.68	1.042	194	2.11	1.206
Experiment 2	Gender	617	.51	.500	265	.30	.460	302	.49	.501
	Age	617	39.57	14.544	265	34.55	12.242	302	34.90	12.339
	Education	617	4.08	1.304	263	4.10	1.371	301	4.13	1.281
	Parenthood	580	.42	.494	255	.44	.498	288	.69	.464
	Income	550	2.81	1.254	221	1.86	1.057	260	1.95	1.124
Experiment 3	Gender ¹	767	.49	.500	115	.42	.495	58	.43	.500
	Age ²	769	40.46	14.270	117	35.48	12.005	58	32.66	12.371
	Education ³	765	4.11	1.326	113	4.24	1.197	57	3.51	1.351
	Parenthood ⁴	763	.41	.492	113	.47	.501	57	.70	.462
	Income ⁵	693	2.54	1.139	111	1.79	1.088	53	1.72	.841

¹Gender: 1=male, 0=female; ² Age by years; ³ Education was measured on a 6-point scale ranging from telemetry school =1 to a masters' degree and beyond =6; ⁴ Parenthood: 1= "has children", 0="does not have children"; ⁵ Income level: relative to average household income: ranging from 1="much lower" to 5="much higher".

Appendix C: measures applied in the study

Experiment 1 and 2:

Dependent variable:

Compliance intentions were measured using the protocol for measuring behavioral intentions in a medical context (Francis et al., 2004). The scale included three items and asked the participants to indicate the degree to which they agreed with them on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The three items are identical except for the verb regarding intentions: "I expect/ want/ intend use an eye protector / stay at home during the lockdown." The scores of the three items were averaged to a single scale, following an inter-item reliability check (Cronbach's alpha EXP1=0.923 EXP2=0.914).

Independent variables:

Wellbeing was measured using the Hebrew version of the WHO-5, the World health Organization's index for assessing individual wellbeing (WHO, 1998). The index is calculated based on 5 statements ranked on a 6-point Likert scale, e.g., "I have felt calm and relaxed". Respondents are asked to rate how often these statements described their feelings over the last two weeks, ranging from "at no time" = 0 to "all the time" = 5. The ratings were summed and multiplied by 4, creating a scale ranging from 0-100, where 100 indicates high levels of wellbeing.

Depression, anxiety and stress levels were assessed using the Hebrew version of the DASS-21 scale (Lovibond & Lovibond, 1995; Pelgi, 2019). This tool is composed of 3 sub-scales of 7 4-point items, measuring each of the three emotional states. Example items are: "I felt down-hearted and blue" for depression; "I found it hard to wind down" for stress; "I felt I was close to panic" for anxiety. Participants are asked to rate the extent to which each item applied to them in the past week, ranging from "Did not apply to me at all"=0 to "Applied to me very much or most of the time"=3. Ratings were summed in each sub-scale, forming three scales ranging from 0 to 21, where 21 indicates high levels of depression, anxiety and stress. Since the three scales are usually strongly correlated, they are often combined to a single 21-item scale, ranging from 0 to 63, and we did the same.

Perceived effectiveness/benefits of the promoted behavior was measured using the following item: "To what extent do you assume that using an eye protector/ staying at home during the lockdown will reduce the chances of you being harmed by the Coronavirus?". Responses ranged from 1="very little extent" to 5="very great extent."

Following (Janz & Becker, 1984), we measured three types of *perceived barriers* for health behavior adoption: *physical, psychological and logistic*. Each type was measured by a single item asking participants to rate the extent to which physical, psychological and logistic difficulties may inhibit them from performing the presented instructions. Example item: "to which extent will using an eye protector/ staying at home during lockdown will cause you emotional distress, such as embarrassment, stress and anxiety?". Possible answers range from 1="to very little extent" to 10="to very large extent", indicating the score for each of the barriers.

Risk perceptions about the virus: inspired by studies on previous pandemics and natural disasters (Bults et al., 2011; Freimuth et al., 2017; Shim & You, 2015), we used the following three items to measure both cognitive and emotional perceptions of health related risks posed by the virus: (1) "How likely do you think it is that you would become sick with coronavirus?" (1=not at all likely – 5=very likely); (2) "How severe would your condition be if you did become sick with coronavirus?" 1=not at all – 5=very severe); and (3) "To what extent are you worried about the possibility of becoming sick with coronavirus?" (1=not at all to 5=very much). An inter-item reliability check, indicated a relatively low, yet acceptable value (Cronbach's alpha EXP1=0.536; EXP2=0.685; EXP1+ EXP2=0.636; Taber, 2018; van Griethuijsen et al., 2015). Hence, the scores were averaged to form a single scale ranging from 1 to 5.

Perceived self-efficacy for performing health guidelines, were measured differently in each experiment. In EXP1, inspired previous work (Barclay et al., 2007; de Vries et al., 2012), participants were asked to state the level of which they believe they could comply with the presented instruction, ranging from 1="definitely not" to 5="definitely yes". In EXP2 we used Farooq et al's (2020) COVID-19 adjusted self-efficacy measure. It is composed of 3 items (e.g. "I am able to take avoidant

measures against COVID-19 if I want to”) and answers range between 1= "strongly disagree" to 5="strongly agree". The scores of the three items were averaged to a single scale, following a low but acceptable inter-item reliability check (Cronbach's alpha = 0.638; Taber, 2018; van Griethuijsen et al., 2015).

Perceived crisis severity was measured using Arpan and Roskos-Ewoldsen's (2005) scale, which is composed of three 11-point, bipolar items, ranging between 0 and 10. The items assessed the degree to which participants felt the COVID-19 crisis was not at all serious/extremely serious, not at all bad/extremely bad, and not at all severe/extremely severe. The scores of the three items were averaged to a single scale, following an inter-item reliability check (Cronbach's alpha EXP1=0.915 EXP2=0.921). The mean scores in each experiment statistically confirmed that the crisis severity was indeed perceived higher in EXP1 than in EXP2 (EXP1: M=6.87, SD=2.53; EXP2: M=6.62, SD=2.48; $t_{(1,796)}=2.005$; $p<0.05$)

We used Huang & Zhao's (2020) COVID-19 *knowledge* items to assess participants' knowledge about the virus. 6 statements regarding contagion factors, incubation period and treatment ways were presented to the respondents, which could state whether each statement is correct/ incorrect or if they didn't know if it were true or false. Example item is: "Inhalation of droplets from sneezing, coughing, or talking to an infected person could cause infection". Each correct answer was regarded as a point and the scores were summed to a single scale ranging from 0-6.

Trust in government: The cynicism/trust scale was used to measure the level of institutional trust (Kang & Van Ryzin, 2019; Miller, 1974). The scale assesses perceptions regarding the professional and personal integrity of the government, using 5 items with answers ranging from 0 to 100, with 0 indicating low levels of trust. A sample item is: "How much of the time do you think you can trust the government to do the right thing?" Following an inter-item reliability check (Cronbach's alpha EXP1=0.874 EXP2=0.885), items were averaged to form a single 0-100 scale.

Internal and external political efficacy (Wolak, 2018) were measured by 5 5-point items in total (2 for internal and 3 for external). Example items are "Sometimes, politics seem so complicated that a person like me can't really understand what's going on in state government" and "Most elected officials in the government care what people like me think." Respectively.

An inter-item reliability check revealed weak but acceptable values (external efficacy: Cronbach's alpha EXP1=0.410; EXP2=0.789; EXP1 + EXP2=0.689; internal efficacy: Cronbach's alpha EXP1=0.773; EXP2=0.796; EXP1 + EXP2=0.788). Hence, two scales of political efficacy were created, based on the mean scores of the items.

In order to measure *compliance with previously issued government health instructions* participants were asked to rate the extent to which they have kept the following instructed/recommended health behaviors in the past week on a 0 (never) to 100 (always) scale: mask wearing in public places; keeping 2-meter distance from people out of your immediate family and frequent hand washing. The three items demonstrated a satisfactory inter-item reliability (Cronbach's alpha EXP1=0.732 EXP2=0.731) and were averaged to perfume a single 0-100 scale of reported compliance with current instructions.

Predicted compliance levels of other citizens were assessed using a single item inspired by Scholz & Brook (1998) in which participants were asked to assess the rate to which other citizens will comply with the simulated instruction ranging from 0="no one" to 100="everyone".

Demographic variables: We controlled for age (in years), gender (0-female; 1-male), and parenthood (0-not a parent; 1-is a parent). Education level was measured on a 6-point scale, ranging from (1)-elementary; (2)- partial high Scholl; (3)-full high school; (4)-above high school; (5)-a bachelor's degree; (6)- a master's degree and beyond. We also controlled for income level, as stated by the participants to be one of the following options, referring to the average household income in Israel: (1) much lower; (2) lower; (3) about the same as; (4) higher (5) much higher.

Experiment 3:

The following variables were measured using the same tools applied in the former experiments:

Dependent variable:

Compliance intentions (Cronbach's $\alpha=0.942$)

Independent variables:

Trust in government (Cronbach's $\alpha=0.896$)

Demographic variables: Age, gender, parenthood, income level, education level.

The following independent variables were measured uniquely in this experiment:

Government intervention level: as described in the 'procedure' section, we adapted our vignettes to 4 levels of the Nuffield Council on Bioethics' intervention ladder (Nuffield Council on Bioethics, 2007). It is an 8-level ladder of possible government actions representing levels of government intervention in the degree of choice citizens have for adopting health behavior. The ladder ranges from low to high intervention in the following steps: 1="Do nothing"; 2="Provide information"; 3="Enable choice"; 4="Guide choices through changing the default policy"; 5="Guide choices through incentives"; 6="Guide choice through disincentives"; 7="Restrict choice" and 8="Eliminate choice (mandatory regulation)". For this experiment we simulated government actions which simulated steps 2,5,6,8, (information provision about the advantages of getting vaccinated every 6 months, positive incentives for those who will vaccinate every 6 months, negative incentives for those who will not vaccinate every 6 months and eliminate choice by presenting a mandatory vaccination every 6 months) as they represent the relevant spectrum of the ladder and match the context of this study.

We also used this measure to create a dichotomous variable indicating whether the participants were exposed to instruction to get vaccinated every 6 months or to information about the benefits of vaccination every 6 months.

Perceived benefits of the promoted behavior was measured by asking participants to state their level of agreement with the following 2 items (Y. Chen et al., 2020; Lin et al., 2020): (1) "Getting vaccinated against COVID-19 every 6 months is a good idea because it makes me feel less worried about catching COVID-19"; (2) "Getting

vaccinated against COVID-19 every 6 months will reduce may chances of catching COVID-19". Answers could range between 1= "strongly disagree" to 5="strongly agree". These items were highly correlated (Pearson's $r=0.853$; $p<0.01$) and hence averaged to a single 1-5 index.

Barriers: we measured 6 types of barriers for adapting the promoted behavior using the following tools:

Safety barriers were measured using Gerend et al's (2013) 3-item scale. Example item: "I have concerns about the safely of getting the COVID-19 vaccination every 6 months". Answers could range between 1= "strongly disagree" to 5="strongly agree". After an inter-item reliability check (Cronbach's $\alpha= 0.861$) we created an averaged scale.

Psychological barriers were measured using 3 items inspired be previous work on health behavior adoption (Ampofo et al., 2020; Champion, 1984). The items were "getting the COVID-19 vaccination every 6 months will cause me embarrassment/ stress/ anxiety". Answers could range between 1= "strongly disagree" to 5="strongly agree". After an inter-item reliability check (Cronbach's $\alpha= 0.856$) we created an averaged scale.

Logistic barriers were measured using 2 5-point items (Gerend et al., 2013) measuring the perceived ability and available time to get vaccinated every 6 months. We averaged these items to form a single scale, given a fair correlation between the two (Person's $r=0.674$; $p<0.01$).

Physical barriers were measured using 2 5-point items measuring the predicted pain and discomfort that may be caused by getting vaccinated every 6 months. We averaged these items to form a single scale, given a strong correlation between the two (Person's $r=0.846$; $p<0.01$).

Coherence barriers were meant to measure the perceived coherence and alignment of the promoted behavior with the government's preceding other pandemic-mitigating measures. Following Sablonnière (2020), we asked the participant to state their level of agreement (1= "strongly disagree" to 5="strongly agree") with the following items: (1) "the instruction/ the information regarding the benefits of getting vaccinated against COVID-19 every 6 months does not compliment the rest of government instructions regarding the Coronavirus"; (2) "the instruction/ the information regarding the benefits of getting vaccinated against

COVID-19 every 6 months is not connected to the rest of government instructions regarding the Coronavirus". Given a strong correlation between the items (Person's $r=0.903$; $p<0.05$), we averaged them to a single scale.

"*Sucker*" barriers or "perceive loafing" were meant to assess the participants' perceptions regarding other citizens prospected effort to participate in the joint effort to eradicate the pandemic by vaccinating, and its perceived effect on the participants to make effort to adopt the advocated behavior. Following Mulvey and Klein (1998) participants were asked to state their level of agreement (1= "strongly disagree" to 5="strongly agree") with the following items: (1) "since other people will not make an effort to get vaccinated against COVID-19 every 6 months, I will not make an effort to do so as well"; (2) "since other people will not do their best to get vaccinated against COVID-19 every 6 months, I will not do my best to do so as well". Given a strong correlation between the items (Person's $r=0.923$; $p<0.01$), we averaged them to a single scale.

Agreeableness, the a personality trait associated with prosocial behavior (Graziano et al., 2007), was measured using Rammstedt and John's (2007) agreeableness items from their short version for the BIG5 scale. Participants were asked to state their level of agreement (1= "strongly disagree" to 5="strongly agree") with the following items: (1) "I see myself as someone who is generally trusting"; (2) "I see myself as someone who tends to find fault with others" (reversed coding). The scores of the items were averaged to a single agreeableness scale.

Self-efficacy: We used Chen et al's (2001) 8-item 5-point General Self-Efficacy Scale. Example item is "I believe I can succeed at most any endeavor to which I set my mind". Participants were asked to state their level of agreement with each item (1= "strongly disagree" to 5="strongly agree"). Following an inter-item reliability check (Cronbach's $\alpha= 0.944$) we created an averaged scale.

Aiming to refine the tools in which we measured the components of the HBM, we replaced the medical risk perception scale with the two classic components of the HBM that capture two different dimensions of the perceived risk: *Perceived Severity* of the disease and the *perceived Susceptibility* of becoming ill with. These were measured by three items each, using Lin et al's (2020) items for measuring

the HBM factors during the Coronavirus pandemic. The items for severity were: "Complications from COVID-19 are serious"; "I will be very sick if I get COVID-19"; "I am afraid of getting COVID-19". The susceptibility items were: "the chance of getting COVID-19 in the next few months is great"; "I worry about the likelihood of getting COVID 19"; "Getting COVID-19 is currently a possibility for me". The participants were asked to state their level of agreement with each item (1="strongly disagree" to 5="strongly agree"). Following an inter-item reliability check (Cronbach's $\alpha = 0.71$ (severity) and 0.745 (susceptibility)) we created an averaged scale for each of the variables.

Previous contraction of COVID-19: this was measured by a single YES/NO item in which participants were asked whether they were sick with COVID-19 in the past.

Previous vaccination against COVID-19 was measured by a single YES/NO item in which participants were asked whether they have received the COVID-19 vaccination in the past.

Inspired by previous work on perceived self-efficacy for complying with health measures during the current pandemic (Y. Chen et al., 2020; Farooq et al., 2020), we measured *self-efficacy for performing the promoted behavior* using 3 items, example item is "I am able to get vaccinated against COVID-19 every 6 months if I want to". Answers could range from 1="strongly disagree" to 5="strongly agree". Following an inter-item reliability check (Cronbach's $\alpha = 0.83$) an averaged scale was created.

Social norms of compliance with the promoted behavior: inspired by Scholz & Brook (1998) we used a single item in which participants were asked to assess the rate to which their close friends and relatives will get vaccinated every 6 months, ranging from 0="no one" to 100="everyone".