Truth-telling incentives:

Discrimination against the LGBT-community

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Abstract

The lesbian, gay, bisexual, transgender community (LGBT) is a marginalised social group experiencing discrimination daily. In this study we aim to explore right-wing authoritarianism (RWA), social dominance orientation (SDO), and perceived controllability (PC), as predictors of discrimination measured via self-reported discrimination (SRD). Additionally, PC was explored as a possible mediator in explaining the associations of RWA and SDO with SRD. The Choice-matching (CM) method was applied as an incentive compatible survey scoring method. This method was explored due to the presence of social desirability bias (SDB) induced during questionnaires on sensitive topics. By generating honest answers via CM method we aim to reduce the effect of SDB. In order to examine CM method's truth-inducing effect, two conditions were constructed. Respondents were to be randomised 50:50, for either treatment condition (evident application of CM method) or control condition (no evident application of CM method). In our study under both conditions, strong associations for RWA and SDO on SRD were detected. PC was found to be a moderate associated with SRD as a predictor, however failed to mediate the relationship for SDO and RWA in predicting SRD. Furthermore, we didn't detect CM method's overall truth-inducing effect. The results of all the factors and CM method's treatment effect were discussed in the current study.

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1. Introduction

1.1 Discrimination of the lesbian, gay, bisexual, and transgender (LGBT) community in Europe.

Discrimination towards the LGBT-community remains an important social issue as members experience it on a daily basis despite improvements against discrimination enforced by authorities (Almeida, Johnson, Corliss, Molnar, & Azrael, 2009; Costarelli & Gerłowska, 2015; Harper & Schneider, 2003; Nemec, Swarbrick, & Legere, 2015; Pizer, Sears, Mallory, & Hunter, 2011). A survey carried out in 2013 among approximately 90,000 LGBT-respondents across the European continent and Croatia measuring the prevalence of discrimination revealed 47% of respondents experienced harassment, violence, and discrimination based on their sexual orientation and/or gender identity (FRA, 2014). Deviant sexual orientation or gender identity have been considered main triggers of discrimination towards the LGBT-community in the EU (Dovidio, Hewstone, Glick, & Esses, 2010).

1.2 Predictors of discrimination

Prejudice is considered the underlying intra-psychic phenomenon of discrimination and it was suggested that predictors of prejudice can be used as predictors of discrimination (Almeida *et al.*, 2009). In order to understand discriminatory behaviour towards the LGBT-community, the relationship between predictors of prejudice, and by extension discrimination, require exploration. The predictors applied in the current study are social dominance orientation (SDO), right-wing authoritarianism (RWA) and perceived controllability (PC) – as these predictors share an association with discrimination (Asbrock, Sibley, & Duckitt, 2010; Bäckström & Björklund, 2007).

SDO is defined as an individuals' desire of one's in-group dominion and superior perspective in contrast to different (or out-group) social groups (Asbrock *et al.*, 2010; Bäckström & Björklund, 2007). RWA is defined as individuals who tend to be submissive towards authority, highly respect the conventional values by authorities, and tend to act aggressive towards out-groups (Asbrock *et al.*, 2010; Bäckström & Björklund, 2007).

PC is the belief that someone has control over certain domains in life (Crocker, Major, Steele, Gilbert, Fiske, & Lindzey, 1998; Goffman, 2009). In the context of prejudice, this belief could be seen as a factor in enabling prejudice and thereby discrimination (Haider-Markel & Joslyn, 2008). Based on the definition of PC, individuals might therefore perceive that other individuals have control over their sexuality, yet they do choose to act on the deviant domain of life with disapproval of the in-group as a consequence. In their perspective it is considered a choice to act on the deviant sexual orientation - thus it is also a choice to not be

homosexually oriented either. Based on the concepts of PC and the influence it could have on prejudice and discrimination – PC will be evaluated as predictor for discrimination and mediator of the expected associations between SOD, RWA and discrimination towards the LGBT-community in this master thesis.

1.3 Social desirability bias

Social desirability bias (SDB) can be observed in the setting of a survey on sensitive topics and characterizes with two phenomena: under-reporting or over-reporting on self-reported measures (Patel, Long, McCammon, & Wuensch, 1995). This leads to two typical scenarios: Firstly, undesirable social attitudes like sexism, racism, physical abuse, drug abuse, abortion, and smoking are more likely to elicit under-reporting responses when questioned during a survey (Krumpal, 2013; Roese & Jamieson, 1993); secondly, socially desirable behaviours like seat-belt usage, eco-friendly actions and voting are more likely to elicit over-reporting by respondents when questioned during a survey (Ong & Weiss, 2000). Therefore, SDB is acknowledged to result in unrepresentative data and therefore distorts the relationship and analysis between variables by increasing the error of data analysis leading up to increased likelihood of bias (Cote & Buckley, 1988). Meaning that SDB has to be compensated in order to generate accurate results in the data analysis of data on sensitive topics. In order to reduce the influence of SDB on the gathering and analysis of sensitive topics during surveys, a survey scoring method can be applied to account for this bias. A survey scoring method is a type of method that survey researchers apply within multiple choice questions regarding sensitive topics in order to generate truth-telling incentives, and consequently elicit honest subjective data (Weaver & Prelec, 2013). Different types of scoring methods exist such as "Bayesian Truth Serum" (BTS) and its extensions "Robust Bayesian Truth Serum" (Prelec, 2004; Witkowski & Parkes, 2012), and "Choice-matching" (CM) (Cvitanić, Prelec, Riley, & Tereick, 2019). BTS is an incentive compatible survey scoring method under which based on certain conditions. Eliciting honest answers for sensitive topics is achieved (Prelec, 2004). CM-method is a recently proposed method, which by implication can be stringently truth-inducing under certain conditions. The fundamental concept of this method is to combine an individual's judgement or preference together with an auxiliary task (e.g. design surveys in the form of multiple choice questions in which respondents have to predict the frequency of the corresponding survey answered by other) to induce truth-telling (Cvitanić *et al.*, 2019). Having respondents participate in surveys with auxiliary tasks based on the CM method will result in a corresponding score of their performance. Respondents will be compensated via incentive rules designed by the survey researcher, which is based on their corresponding CM score derived from the survey.

1.4 Aim of Research

Accurate exploration of sensitive topics such as discrimination is difficult due to factors such as SDB. By applying the CM method in our survey we try to correct the bias induced by SDB and elicit honest answers on the sensitive topic: discrimination of the LGBT-community. Possible factors that could influence discrimination towards the LGBT-community like SDO, RWA, and PC need to be explored as predictors of discrimination. With this masters' thesis we aim to explore and understand the behaviour of discrimination towards the LGBT-community by assessing whether the CM method based on incentives, truth-telling can be achieved with regard to the evaluation on the predictive influence of SDO, RWA and PC on self-reported discrimination (SRD). Additionally, the extent of the predictive effect of the measures will be evaluated. Moreover, based on the concept of SRD we aim to explore a mediation effect of PC for predictors (SDO & RWA) in predicting SRD towards the LGBT-community.

2. Literature Review

The literature review will provide details of main variables (SRD, SDO, RWA and PC) and the methodology (CM method). While clarifies how the hypotheses were formed for this master thesis.

2.1 The LGBT-community: the target of discrimination.

Sexual orientation and gender identity are two elements of the process on self-identity integration. Self-identity integration is the concept of getting comfortable, certain, and eventually accepting these elements as a part of one's own unique identity. Sexual orientation and gender identity are an indispensable part of someone's identity, of which an individuals of the LGBT-community should morally not get discriminated against (Rosario, Schrimshaw, Hunter, & Braun, 2006). Homosexual individuals (gays and lesbians) identify themselves with an attraction towards individuals of the same gender in an erotic and emotional sense (Eliason, 1996). Based on their social identities homosexual individuals are more likely to be a target of discrimination. Bisexual individuals are discriminated against based on their attraction of an individual's characteristics besides gender (e.g. physical build or eye colour). Therefore, identifying as bisexual can lead to discrimination in the sense that bisexuals cannot be trusted, as they do not have an exclusive preference based on gender such as homosexuality or heterosexuality. Yet bisexual individuals' sexual spectrum is characterised with an inclusive preference for their own or opposite gender even to the point of experiencing sexual attraction to more than one gender, and even shift in between gender preference(s) (Bowes-Catton & Hayfield, 2015). For transgender people the predominant discriminatory behaviour is based on the misunderstanding of their sexual orientation and gender identity. Transgender people can actually identify as

homosexual, heterosexual, bisexual, or even asexual. Moreover, as transgender people do not identify as either male or female they are more likely to be discriminated (Weinberg, Williams, & Pryor, 1995). This is the root cause of transphobia.

Being a member of the LGBT-community is a ground of discrimination of different domains in life (e.g. healthcare, housing, education, services in life, and access to resources), or in worse case scenarios even hate crimes against the LGBT-community (FRA, 2014). Discrimination towards the LGBT-community can be found via several forms of media. The transmission of discriminatory behaviours through media such as: literature, movies, broadcasts, and online streaming services, which amplify discriminatory behaviour (Rangelova, 2009). As the media is considered an efficient element in influencing discriminatory behaviour, it has the power to affect social reality. Therefore, it is able to negatively influence the public (Gross, 1994). In the aspect of social context sexual orientation and gender identity they have been left behind and treated non-existent by, for example, the United States' society. This results in the indirect discrimination of this community in general (Puente, Gray, & Agnew, 2009). In the context of health people from the LGBT-community are more susceptible to developing psychological issues by experiencing discrimination (DeAngelis, 2002; Dentato, 2012; Luiggi-Hernández, Torres, Domínguez, Sánchez, Meléndez, Medina, & Rentas, 2015; Mustanski, Garofalo, & Emerson, 2010). Moreover, identifying as lesbian, gay, bisexual, or transgender consequently has negative implications in professional working environments resulting in lower incomes salary wise (in contrast to their heterosexual counterparts). The situation for transgender people is considerably worse (Allegretto & Arthur, 2001; Berg & Lien, 2002; Black, Makar, Sanders, & Taylor, 2003; Church, 2012). For example, transgender people experience more discrimination in the working context or are more often unemployed (Dispenza, Watson, Chung, & Brack, 2012; Kenagy & Bostwick, 2005; Xavier, Bobbin, Singer, & Budd, 2005). Therefore, the exploration of discriminatory behaviour is needed to generate implications to improve the current situation for the LGBT-community. In this literature review we will explore possible factors of discrimination affecting the LGBT-community, and moreover analyse methods to apply for our study to gather this data truthfully.

2.2 Discrimination

Discrimination is the expression of an individual's prejudice. Prejudice can be defined as individuals holding prejudicial attitude towards either: a certain social group or an individual due to their belonging of a specific prejudiced social group resulting in negative actions towards others (Batson & Powell, 2003, McConnell & Leibold, 2001).

Sociologically, discrimination is defined as: "The affirmative action in maintaining an intrinsic individual belonging to in-group characteristics at the expense of targeted out-groups (or their members) that do not confirm to these in-group characteristics" (Jones, 1997). Whereas, psychological discrimination is defined as: "The behavioural treatment of an individual towards the targeted out-group or targeted individual of said group, based on an individual's own confirmed stereotypical perspectives and prejudice" (Snyder, 1984; Snyder, 1992; Word, Zanna, & Cooper, 1974). Based on a combined interpretation of sociological and psychological definitions of discrimination and prejudice, we can establish the following interpretations: Discrimination is the behaviour of an individual (or individuals) towards a specific group member or a whole social group - whereas prejudice is considered the intra-psychic phenomenon expressed towards social groups. This can be exemplified based on studied examples such as behaviours on chosen seating distance or the behaviour of purposely avoiding members from out-groups as discrimination, which can be interpreted as discrimination, and thus can be an expression of holding prejudice (Batson & Powell, 2003; Crocker *et al.*, 1998).

Discrimination via the prospects of social identity and self-categorisation has been observed as enhancing in-group favouritism, which is the core concept in affecting principles such as prejudice and discrimination (Allport, Clark, & Pettigrew, 1954; Fiske, 1998). Fiske (1998) conducted an experiment in examining relationship between discrimination and in-group relations via categorisation. People were randomly allocated into groups where the act of discrimination via categorisation can be observed. The randomised allocation results in a distribution of social rewards leaning towards in-group favouritism with disregard to basic explanation such as self-interest and reciprocity for leaning towards the in-group. The establishment of this distribution consequentially indicates that when the principle of in-group and out-group are clear, a tendency towards favouring of belonging to an in-group in terms of welfare (resources) is the result. As the in-group and out-group are not socially equal, a display of discrimination and negative feelings are harboured by the in-group towards the out-group so that the in-group can properly secure its welfare. The perspective for in-group favouritism is the whole group itself. Meaning that the discrimination based on intergroup relations originates between a discrepancy of perspectives as a group between the whole in-group and whole out-group.

2.3 Self-reported discrimination (SRD)

Self-reported discrimination (SRD) was identified as a measuring tool for discriminatory behaviour in our surveys. SRD is a robust tool used in order to evaluate and measure the presence of discrimination in researched marginalised populations. SRD can be closely associated with real-life discrimination, especially regarding marginalised social groups (Boag & Carnelley, 2012; Gee, Ryan, Laflamme, & Holt, 2006; Jackson, Brown, Williams, Torres, Sellers, & Brown, 1996; Schulz, Gravlee, Williams, Israel, Mentz, & Rowe, 2006). Based on current literature the relationship between SRD and discriminatory behaviour can be explored to get an understanding of discrimination towards marginalised social groups. For example: Muslims are typically perceived as a marginalised social group. In the experiment of *Boag & Carnelley (2012)* participants were required to choose their own seating within the same row of seats, where one seat was already taken by a person identifying with the Islamic religion, this procedure was designed to identify participants' actual discriminatory behaviour towards the Muslims. After which, each participant was required to fill in a survey regarding SRD, which was designed to elicit their preference of discrimination towards Muslims. Results of this study pointed out a significant correlation between SRD and actual discriminatory behaviour. This implies that self-reported discriminative preference towards Muslims would in fact lead to actual discrimination towards a Muslim person (Boag & Carnelley, 2012). Therefore, based on this example exploring negative influences on marginalised social groups via SRD on gathering data on discriminatory behaviour suggests that SRD is a proper tool to use in our study. We aim to implement self-reported discrimination as the methodological tool in our survey to explore and measure discrimination towards the LGBT-community.

2.4 Predictors of discrimination

The predictors of discrimination explored in this study will be right-wing authoritarianism (RWA), social dominance orientation (SDO) and perceived controllability (PC). RWA and SDO are widespread predictors used in predicting prejudice (Asbrock, Sibley, & Duckitt, 2010; Bäckström & Björklund, 2007), the association between PC and prejudice can be also found in research (Haider-Markel & Joslyn, 2008). This suggests that we can apply the predictors of prejudice in predicting discrimination. Therefore, for our study we aim to explore the association between the predictors (RWA, SDO and PC) and outcome variable SRD towards the LGBT-community hence improving the situation for the LGBT-community.

2.5 Right-wing authoritarianism (RWA)

The study of RWA as a concept originated from an alternative studied concept named 'authoritarian personality' that was associated with intolerant behaviours. 'Authoritarian personality' can be defined as: "the state of mind or attitude characterized by belief in absolute obedience or submission to someone and their authority, as well as the administration of that belief through the oppression of one's subordinates" (Adorno, Frenkel-Brunswik, Levinson, Sanford, Aron, Levinson, & Williams, 1950). This concept can be applied to individuals who are known or regarded as authoritarian, strict, or known for an oppressive personality towards their subordinates (Altemeyer, 1981). Over time the definition of 'authoritarian personality' evolved and eventually got referred to as 'Right-Wing Authoritarianism', which got associated with concepts like prejudice and discrimination (Altemeyer, 1981; Altemeyer, 1988; Altemeyer & Altemeyer, 1996).

The definition of RWA is based on three perspectives (Altemeyer, 1981; Altemeyer, 1988). The first perspective is defined by the degree of individuals who tend to be submissive towards authorities or authoritarian figures. The second perspective is defined by the phenomenon for individuals who highly respect the conventional values that are generated by authorities. The third perspective is defined by individuals who are likely to act aggressive towards out-groups based on their RWA characteristics. Based on these three perspectives three outlined well-known reasons are considered the motivation of RWA in individuals. Firstly, a state individual might adopt it from childhood based on harsh unconventional punishment by their parents (Adorno *et al.*, 1950). Secondly, RWA can be adopted from social learning where it can be influenced by factors such as: family, situational factors (e.g. the perceived information or personal experiences) (Altemeyer, 1988; Bandura & Walters, 1977). Thirdly, individuals might adopt RWA in order to meet their psychological needs, which can for example root in epistemic, existential, or ideological fulfilment (Jost, Glaser, Kruglanski, & Sulloway, 2003).

The interpretation of RWA is described as an individual's preference of hierarchy and inequality, which can then be characterised by two characteristics (Duckitt, 2006; Duckitt & Sibley, 2007; Ekehammar, Akrami, Gylje, & Zakrisson, 2004). The first characteristic is characterised by individuals with a high score on RWA which results in the perception of entire out-groups or out-group members as a threat towards their own in-group welfare and traditional RWA values (Whitley, 1999). The second characteristic is characterized by individuals with high scored RWA that consider themselves self-righteous with adequate moral judgment in contrast to out-groups inducing a disapproving domination on an out-group individual or the entire out-group as they are perceived immoral based on their authoritarian perspective (Whitley, 1999).

To illustrate these characteristics studies have shown that people identifying with RWA are associated to hold prejudice towards Native Americans (Altemeyer, 1988), the LGBT-community (Bilewicz, Soral, Marchlewska, & Winiewski, 2017), and individuals with evident appearing handicaps or disabilities (Noonan, Barry, & Davis, 1970). Based on the characteristics of RWA these out-groups can be seen as immoral threats. Based on current examples and evidence in this paragraph we aim to explore RWA as a predictor of discrimination. As mentioned previously, discrimination is considered as the expression of holding prejudice (Batson & Powell, 2003). In regard to RWA it has been shown that individuals with more discriminatory behaviours are likely to occur in individuals with more RWA characteristics (Case, Fishbein, & Ritchey, 2000). Therefore the following objective is constructed: based on the empirical evidence above, an association of RWA and self-reported discrimination towards the LGBT-community can be expected forming our first hypothesis.

Hypothesis 1: Right-wing authoritarianism (RWA) is positively correlated with self-reported (SRD) discrimination towards the LGBT-community.

2.6 Social dominance orientation (SDO)

Individuals scoring high in SDO are more likely to discriminate (Case *et al.*, 2000; Levin & Sidanius, 1993; Pratto, Sidanius, Stallworth, & Malle, 1994; Sumajin, Fishbein, & Ritchey, 2001). The definition of social dominance orientation (SDO) is based on an individual's desire of one's in-group dominion and superior perspective in contrast to other social groups (Pratto *et al.*, 1994). In other words, SDO is the confirming preference of maintaining a superior in-group position in society over out-groups. The individuals that strictly identify with SDO emphasize the opposition of between-group equality. Therefore, these individuals enhance the discrimination against 'inferior' out-group members or out-groups (Sidanius, 1993; Sidanius & Pratto, 1993). This is based the fact that individuals that score high on SDO treat other individuals as categories. This means that others meet their need of maintaining a dominant social position by influencing others. Henceforth, individuals with a higher SDO will be more inclined to discriminate against subordinated groups and their respective members.

Various forms of prejudice are strongly associated with SDO (Poteat & Mereish, 2012). For example, this association was seen in the empirical research of Bizer, Hart, & Jekogian (2012) where it was shown that individuals with high scores in SDO have an increased negative attitude towards individuals with mental illness. Moreover, Whitley (1999) found a positive relationship between SDO and negative attitude towards homosexuals and African-Americans. Therefore, SDO can be used as a predictor in researching discrimination due to these evident associations on marginalised groups (Akrami, Ekehammar, & Bergh, 2011; Altemeyer,

1998; Asbrock *et al.*, 2010; Duckitt & Sibley, 2010; Sibley & Liu, 2010; Whitley, 1999). Based on this we hypothesize   that:

> **Hypothesis 2:** Social dominance orientation (SDO) is positively correlated with self-reported discrimination (SRD) towards the LGBT-community.

2.7 Perceived controllability (PC)

The definition of perceived controllability (PC) is someone's belief of another's control over certain domains in life. The concept of PC is important for marginalised individuals - or groups - as they are typically more targeted with discriminatory or prejudiced attitudes (Crocker *et al.*, 1998; Goffman, 2009). One of the examples of PC in the context of marginalised individuals can be observed through overweight people. Based on prejudiced attitudes overweight people suffer from discrimination in different domains of life (Allon, 1982; Puhl & Brownell, 2001). When applying the definition of PC the logic behind this discrimination originates from the conservative social ideologies focussing on the ideal weight. Therefore, people believe that being overweight is the consequence of inadequate controllability (Crandall & Biernat, 1990; Crandall, 1994; Crandall & Martinez, 1996). For example, being overweight for women is perceived as the result of bad lifestyle or habits. Consequently, these women will experience prejudiced attitudes (Blaine & Williams, 2004). Based on the association of PC and prejudice people will believe that being overweight is someone's own responsibility. Therefore, being overweight is considered an individual controllable situation resulting in a more negative prejudiced attitude towards overweight people (Magallares, 2014).

The finding of Magallares (2014) confirmed the association between PC and prejudice. Furthermore, in his study he explored if PC could explain the association between SDO, RWA and prejudice towards overweight people as mediator. The mediation model he constructed was based on predictors (SDO & RWA), mediator (PC), and with the outcome of prejudiced attitudes towards overweight individuals. His findings indicated that PC was a valid mediator in explaining the associations between variables (SDO & RWA) and prejudice towards overweight individuals (Magallares, 2014). In Magallares's study PC partly explained why individuals scoring high on SDO and RWA were more likely to harbour prejudiced attitudes towards overweight individuals. This mediation model from (Magallares, 2014) provides us conceptual evidence in exploring whether PC can explain the associations between SDO, RWA, and SRD towards the LGBT-community.

PC on homosexuality is considered controversial when it comes to the controllability of homosexuality itself. PC has been shown to have a positively association with negative prejudice (Crocker *et al.*, 1998; Goffman, 2009). The belief that homosexuality is more controllable (higher PC) results in negative prejudice towards homosexuals. However, this belief of controllability can either positively or negatively affect prejudice (Haider-Markel & Joslyn, 2008). For example, individuals who perceive homosexuality is caused by genetic factors resulting in a low score of PC. As a result, these individuals yield a higher tolerance towards homosexuality (Mitchell & Dezarn, 2014). Moreover, another study explored if individuals perceive homosexuality as uncontrollable (lower PC), they are more likely to make friend with lesbian women (King, 2001). In addition, a lower PC over homosexuality can also positively influence support for same-sex marriage (Whitehead, 2014). These examples illustrate that individuals with a lower PC present have a less prejudiced attitude towards homosexuality, which indicates a lower PC reduces prejudice. Potentially this suggests that if someone has a high PC, a more prejudiced attitude towards homosexuality can be expected. Homosexuality is a major component of the four identities within the LGBT-community. Therefore, PC can be applied to a concept such as the membership of the LGBT-community to analyse the possibility that PC is associated with discrimination (the extension of prejudice). To summarise, PC has the potential to predict self-reported discrimination towards the LGBT-community resulting in the following hypothesis:

Hypothesis 3: Perceived controllability (PC) is positively correlated with self-reported discrimination (SRD) towards the LGBT-community.

Moreover, based on the mediator example of Magallares (2014), PC could be used to mediate the associations between predictors (SDO & RWA) in predicting the outcome (prejudice). In extension we could use it to clarify the relationship between our predictors (SDO & RWA) and self-reported discrimination (SRD) towards the LGBT-community in our study. Therefore, we established the following hypothesis of PC's mediation effect:

Hypothesis 4: Perceived controllability can mediate the correlations of predictors social dominance orientation (SDO) and right-wing authoritarianism (RWA) in predicting self-reported discrimination (SRD) towards the LGBT-community.

2.8 Social Desirability Bias (SDB)

Social desirability bias (SDB) is a phenomenon where individuals are likely to report socially desirable answers regarding sensitive survey topics. As a result survey researchers obtain biased results. SDB results in respondents answering questionnaires on sensitive topics with the preferred common socially desirable answers, therefore causing biased data. The biased data can be categorised in two typical scenarios in terms of the survey questions (Barnett, 1998; Beyer & Krumpal, 2010; Lee, 1993; Tourangeau, Rips, & Rasinski, 2000): In the first scenario individuals are likely to under report answers due to survey questions on socially undesirable topics, therefore eliciting underrated data. On the contrary, survey questions regarding socially desirable topics are likely to elicit overrated data. Research pointed out that people are more likely to under-report socially undesirable behaviours like physical abuse, drug abuse, abortion, smoking, as well as socially undesirable attitudes including sexism and racism (Roese & Jamieson, 1993). Likewise, socially desirable behaviour like proper seatbelt usage, eco-friendly actions, and voting are found to be over-reported (Ong & Weiss, 2000). Upon taking psychological aspects into considering misreporting behaviour is different from lying when it comes to SDB. Lying is considered as a basic social interaction process, which indicates that an individual's cognitive burden is relatively lower (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996). Whereas, an individual deciding to voluntarily misreport on sensitive topics have a deliberate conscious motivation that can be considered partially controllable (Holtgraves, 2004; Holtgraves, Eck, & Lasky, 1997). The reasoning behind this type of misreporting can be referred to the desire of their impression management,[1] and the tendency to self-deception[2] (Paulhus, 2003).

Individuals tend to attach their own perspective on potential risks and costs when participating in sensitive research topics. Upon considering the weight of social norms as a 'benchmark', individuals will tend to be consistent with these social norms in order to get rid of their potential risks and costs to maintain a favourable social profile (Rauhut & Krumpal, 2008). As self-reported survey topics tend to become more private, the tendency of misreporting via SDB increases (Ong & Weiss, 2000). Consequentially, it can lead up to the point that collected data is biased with an increased error term – therefore leading to wrong data analysis, and eventually systematic biased results and interpretations (Cote & Buckley, 1988; Peterson & Kerin, 1981; Zerbe & Paulhus, 1987). In order to generate relatively accurate data, researchers have to compensate for SDB. Applying technique like incentive-compatible survey scoring method can compensate for SDB. Some of the existing survey scoring methods applied in empirical studies are: Bayesian Truth Method

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[1] Impression management is the phenomenon where individuals are driven by social approval and by that drive report socially desirable answers in order to be perceived with a good impression and avoid devaluation from others.

[2] Self-deception occurs when respondents choose answers which coincide with the current social norms in order to achieve a better, albeit deceitful, self-image and self-worth maximisation.

(BTS) (Prelec, 2004; Witkowski & Parkes, 2012), Bayesian Market (Prelec, 2004; Witkowski & Parkes, 2012) or CM Method (Cvitanić *et al.*, 2019).

Survey scoring method is a method, where researchers apply incentives on multiple choice questions regarding sensitive topics in order to achieve truth-inducing, and consequently elicit honest answers (Weaver & Prelec, 2013). To compensate for SDB on questioning discriminatory behaviour of the LGBT-community we aim to design our survey based on the recently developed method of CM to elicit relatively more honest data. Therefore, we expect the distributions of self-reported discrimination in our study to deviate between the treatment and control conditions.

2.9 Choice-matching method (CM)

Choice-matching (CM) method is a survey scoring method considered strictly truth-inducing under certain conditions. The fundamental intention of CM is to combine personal characteristics and an auxiliary task to induce truth-telling. This auxiliary task can be presented in different forms. In order to meet the functional requirements of CM-method, respondents have to be provided with auxiliary tasks. One of these tasks is for example giving predictions on how many other respondents would choose their corresponding answer. To illustrate, researchers constructed a hypothetic example in evaluating five trial products. Respondents were required to only pick one personal favourite version of the trial product and predict how often each of the five other trial products was favoured. Based on provided answers during participation the survey will assign each respondent a score with regard to their performance of the auxiliary task (Cvitanić *et al.*, 2019). After that, a corresponding CM-score will reveal which respondent should be compensated based on incentive rules designed by the survey designer.

The calculation of CM score in the present study was adopted from a hypothetical example derived from (Cvitanić *et al.*, 2019). The CM score was denoted by a function $S\ (\bar{x}_k^{-r}, y_k^r)$, where k ∈ A = (1, 2, 3, 4, 5) that contains five numbers. 'A' represents the range of answers for the survey questions (N=5). $\bar{x}_k^{-r}$ Represents the actual distribution of option K without r's input in the whole sample. The respondent r's prediction of option k is denoted by y_k^r, so-called best prediction. Furthermore, the $\bar{S}^{-r}$ denotes the average CM score excluding respondent r, and therefore only count for other respondents who endorsed the same option as r did. Thus, if and only if, one reported answer was at least reported once by a respondent other than r, then CM will assign him: *λS + (1 − λ) $\bar{S}^{-r}$*, otherwise, the respondent will receive zero. The value of λ depends on the researcher. Moreover, in the hypothetical case suggested two proper scoring rules for S (Savage, 1971):

$$Quadratic: S\ (y, Z) = -\sum_{k=1}^{M}(y_k - Z_k)^2$$

$$Logarithmic: S\ (y, Z) = \sum_{k=1}^{M} Z_K\ log\ (y_k)$$

Z represents a random vector of positive frequencies. In this case Z_k denotes $\bar{x}_k^{-r}$ which is the actual frequency of option k excluding respondent r's input, if any are present. While y_k represents the best prediction of option k, where k ∈ A = (1, 2, 3, 4, 5).

The CM method contains four assumptions (*appendix 1*), which simultaneously are not an absolute requirement for using CM method. This means that the presence of truth-inducing effect can exist even when these assumptions are violated. This is because CM is an incentive compatible method where respondents tend to maximize their own score via CM scoring systems. Therefore, the CM-assumptions do not require strict adherence. In order to personalise the data through our survey we included sixteen questions per main measure (SRD, SDO, and RWA). The CM score will be calculated based on measure SRD alone. Therefore, in our survey only the sixteen questions regarding SRD had an additional auxiliary task of providing predictions on corresponding answers. However, requiring respondents to give predictions to each of the five options per question would be time consuming. This could have led to respondents drop out of the survey halfway through. Therefore, in our study respondents were required to provide only one prediction corresponding to their own reported answer per question. Based on this circumstance we adopted an additional assumption:

Additional Assumption: The remaining percentages of the auxiliary task (predicting the frequency of a survey option) will be evenly distributed into individual's predictions of the other four options.

Truth-inducing methods are significantly associated with the concept of truth-telling based on the predictive nature of the alternative questions. CM method being strictly truth-inducing is associated with its prior implementation procedure. Prior to commencing the survey, respondents would be informed that the monetary reward directly depends on their CM score. Furthermore, the CM score depends on their own and other respondents' performances of the auxiliary task. On the contrary, for the BTS-method respondents were only told to be honest without knowing any of the reward schemes. Therefore, based on the difference in prior implementation procedure the CM method's truth-inducing effect is more advanced in comparison with BTS (John, Loewenstein, & Prelec, 2012; Weaver & Prelec, 2013).

Bayesian truth serum (BTS) is a survey scoring method that provides truth-telling incentives for respondents answering multiple choice questions in combination with providing predictions – meaning that upon answering their own survey question, respondents had to predict how many of the general population of respondents would answer the corresponding answer (Prelec, 2004). Weaver & Prelec (2013) explored BTS' truth-inducing effect in the form of a questionnaire with incentives in order to analyse respondents' knowledge of basic brand names. Based on their study, the BTS method did significantly reduce respondent's deception, which indicated that this survey scoring method has an impact on truth-inducing. It is notable that the component of prediction is significantly associated with the concept of truth-telling. Ross, Greene, & House (1977) designed an experiment on self-referencing exploring whether students minded walking on their respective campus with a sign declaring "Repent". They discovered that students who did not mind walking on campus with a sign "Repent" provided higher prediction, in comparison with students who were not willing to do the same. The CM method shares this predictive component, which coincides with the false consensus effect (Dawes, 1989). This effect is expressed in the form of individuals that present a tendency to be self-referenced in predicting the answers of others with a high association based on their own characteristics. Therefore, the inclusion of prediction as an auxiliary task in particular can contribute to CM's truth-inducing properties.

In the present study two identical surveys were conducted: one treatment version where CM with monetary incentive and awareness of the CM-principle will be applied, and one control version where monetary incentive and awareness of the CM-principle will not be applied, which will be used as a benchmark. Based on the current literature, we expect the results from the treatment and control conditions will be different from each other. In examining CM method's treatment effect in this study we established the following hypothesis:

> *Hypothesis 5:* Respondent's distributions of mean scores on self-reported discrimination (SRD), social dominance orientation (SDO), right-wing authoritarianism (RWA), and perceived controllability (PC) from treatment and control conditions are significantly different from each other.

3. Methodology

3.1 Data collection

Data for this research were collected via an online survey. The survey was distributed as an anonymous link through direct message, e-mail, and various social media platforms: Facebook, multi-channels of Reddit ('Sample Size', 'Subscribers', 'LGBT', 'Behavioural Economics', 'Social/Psychology', and 'Surveying'),

SurveyCircle, and SurveySwap. Part of the various backgrounds were semi-randomly selected as these parts were acquired from the inner social circle.

3.2 Survey Design

An online multiple-choice questionnaire was designed in English via Qualtrics – a survey website able in collecting data anonymously and strictly confidential. For this study the survey was divided into a 'treatment' and 'control' variant of the survey, which can be seen from *appendix 2*.

In order to examine CM method's treatment effect in the current study, the different design schemes were applied to evaluate the truth-inducing properties on discrimination based on the principles of CM. Different introductions were provided for both treatment and control conditions. Basic information of the survey topic was mentioned in both introductions, but it only informs control respondents to answer the survey truthfully. The treatment condition received an introduction - informing respondents of the application of the CM method in the current survey. To enforce the credibility of the survey, trust worthy institutions that developed the CM method Erasmus University Rotterdam (EUR) and Massachusetts Institute of Technology (MIT) were credited as a source. Participants from the treatment condition were also informed that the CM method would assign them a score in terms of their honesty on the reported answers (CM score). In order to convince respondents to answer truthfully, additional comfort was provided by endorsing the anonymous and confidential nature of the survey. Moreover, monetary rewards were provided in the treatment group to ensure CM to be incentive-compatible: Two participants with the highest CM scores will win twenty euro each. The auxiliary task of providing prediction was attached within measure SRD in order to meet the requirements of the CM-score calculation for both control and treatment conditions. After the introduction, a brief detailed instruction was provided on how to answer the auxiliary task. The instruction was featured with nine seconds time restriction, which provides sufficient time for respondents to adopt the instruction. To achieve CM method's truth-inducing, under treatment condition additional information in maximizing the CM score was provided in the instruction. The extra information indicates that each respondent's own CM score depends on two factors, their own inputs on the score and other respondents' performance of the auxiliary task. This extra information potentially informing respondents possible strategy in obtaining a higher CM score, it additionally motivates respondents to assume the payment scheme is feasible in assigning a CM score regardless of any possible scenarios of getting a score of zero (Baillon, 2017). Consequently, respondents tend to maximize their CM score and answer the survey honestly. Therefore, based on the

different design schemes in the current study, results from the treatment condition are expected to be truthful in comparison with the control condition.

3.2 Outcome measures

Main variables

In exploring our research aims, the following measures were acquired through the survey: self-reported discrimination (SRD), social dominance orientation (SDO), right-wing authoritarianism (RWA), and perceived controllability (PC). SDO, RWA and SRD were designed as sixteen-item measures, questions within each measure were designed in a 50:50 balance of positive and negative framing, while PC was designed as a one-item measure.

Self-reported discrimination (SRD)

Sixteen-item self-report discrimination scale was applied in the survey. Each respondent was forced to answer sixteen statement questions regarding situations in terms of anti-LGBT behaviour – and the opposite of anti-gay behaviour in different domains including: working context, parenting, social services, and daily life. A five-point Likert scale (Pornel, 2009) was applied in our main measures (SRD, SDO, RWA and PC). As qualitative data is numerically generated, such data can be easily applied in data analysing and comparing between and within subjects or treatment conditions. The Likert scale includes: (1) Strongly agree, (2) Somewhat agree, (3) Neither agree or disagree, (4) Somewhat disagree, (5) Strongly disagree. Respondents are required to answer to what extent they agree or disagree with the statement question and provide a prediction regarding each of their reported answer in this section. Two examples:

(1) "If I found out one of my friends is gay/lesbian, I would start to keep distance with him/her".
(2) "Harassing someone based on their gender identity is morally wrong, I would always try to help them out whenever it happens around me".

Social Dominance Orientation (SDO)

A typical widely used sixteen-item measure with a focus on measuring individuals' level of SDO was adopted (Pratto et al., 1994). The same five-point Likert scale was applied in all the statement questions ranging from (1) Strongly agree to (5) Strong disagree and respondents were only required to answer to what extent they agree or disagree with the corresponding questions. Two examples:

(1) "I prefer inequality between groups. If all groups were equally treated, I will get less".

(2) "Equal treatment of all social groups is beneficial for the whole society".

Right-wing authoritarianism (RWA)

A sixteen-item measure of RWA was applied. It was first introduced by Altemeyer (1981) which equipped with the same five-point Likert scale in our survey. Respondents were only required to answer to what extent they agree or disagree with the corresponding statement questions. Two examples:

(1) "Our country will fall apart if we don't put mighty leaders in power and let the troublemakers spreading their bad influences stay untouched".
(2) "Every country needs to have free thinkers that are brave enough to challenge and question traditional social values".

Perceived controllability (PC)

A well-known established measure regarding PC has not been found thus far (Whitley, 1999). One attempt in measuring the attitudes towards homosexual individuals was applied by using a Causal Dimension Scale (Russell, 1982; Whitley, 1999). This scale was based on a corresponding scale founded on three dimensions: causality, stability, and controllability – of which the controllability dimension and the anti-homosexual attitudes were associated (Weiner, 1979; Whitley, 1990). The present study adopted one of the measures from the controllability dimension in which the identity was modified from homosexuality into a wider range (being lesbian, gay, bisexual or transgender – or a member of the LGBT community). Respondents were given a five-point Likert scale to indicate to what extent they agree or disagree with this statement. Again the direction of numerical value was reversed for this one question. The statement question regarding PC:

"I believe being a member of the LGBT community is a choice made by individual".

The results of measures SRD, SDO and RWA, the direction of the numerical value was reversed for the negatively designed questions – meaning that a higher score indicates a higher degree of an individual consisting with a corresponding measures' characteristics. For measure PC, the result was reversed as well. Thus higher PC score indicates the more respondent believe being member of the LGBT-community is controllable.

Control variables

Demographic characteristics in terms of age, gender, education, income level, residing country, the LGBT friendship status, sexual orientation, occupation, and religion were inquired and collected at the final section

of the survey as control variables. Questions for demographic characteristics such as sexual orientation, gender, income, education, and occupation additional options "Prefer not to say" and "Other" were included to ensure a low dropout rate – as these questions can be perceived too personal and private. These control variables are expected to aid in explaining personal characteristics of respondents by providing insights for the discrimination towards the LGBT-community. Additionally, respondents are requested to leave a contact email address for the purpose of winning the 20€ reward in the treatment condition.

3.3 Statistical Analysis

Exploring the associations of SDO, RWA and PC on SRD

For all statistical analyses a cut-off of $P < 0.05$ was considered statistically significant. The variables of interest (SRD, SDO, RWA, and PC) will be presented as mean (M), standard deviation (SD) for the treatment and control conditions. Frequencies on variables will be presented as percentages (%). In order to detect the positive correlation between predictors (RWA & SDO) and outcome (SRD) for hypotheses 1 and 2, Pearson's correlation test were conducted. PC is a single item measurement, for which a Spearman's nonparametric correlation will be performed in order to analyse the positive correlation between PC and SRD (hypothesis 3).

PC's mediation effect

In examining hypothesis 4, a mediation model was conducted with the aim to test if PC can mediate predictors SDO and RWA in predicting outcome of self-reported discrimination (SRD). This model will be used to detect if PC explains the respondents with high SDO and RWA will have more tendency of discriminatory behaviour towards the LGBT-community. For this study, a structural mediation model was designed (see *figure 1*). Three procedures are required to perform this model (Baron & Kenny, 1986). The first procedure requires identifying the associations between predictors (SDO & RWA) and outcome variable (SRD), which is represented by path C. The second procedure tests if the predictors (SDO & RWA) are associated with mediator (PC), which is represented by path A. The third procedure will examine if the associations between predictors and outcome are significantly decreased with the presence of PC, which is represented by path C' illustrating PC's mediation effect. Lastly, in our model Path B represents the association between mediator and outcome.

Multiple associations are required to support the eliciting of Path C's mediation effect (path C'). For the most paths studies have found sufficient evidence in supporting path A, B, and C. For path A on predictors (SDO & RWA) and mediator (PC) sufficient evidence was found by Magallares (2014), that SDO, RWA are positively associated with PC. To support the idea of path B the association between mediator (PC) and outcome (SRD)

can be expected from the extended association between PC and prejudice (King, 2001; Mitchell & Dezarn, 2014; Whitehead, 2014). For path C, sufficient evidence was found on individuals with high SDO and RWA are more likely to show discriminatory behaviour found by past study (Case *et al.*, 2000). Thus, we may assume SDO and RWA are positively correlated with self-reported discrimination towards the LGBT-community.

Figure 1 Structural Mediation Model
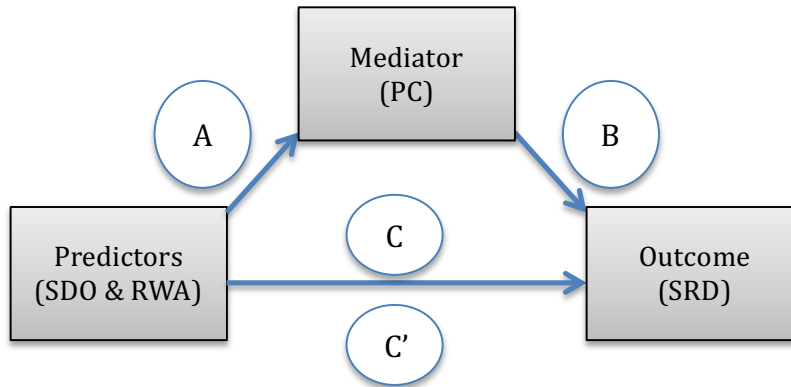
Exploring Choice-matching method's treatment effect and Choice-matching score calculating
Mann-Whitney U test will be conducted on SRD, SDO, RWA, and PC measures by control condition (N = 116) in comparison of treatment condition (N = 111) to explore hypothesis 5: Respondent's distributions of mean scores on SRD, SDO, RWA, and PC from treatment and control conditions are significantly different from each other.

CM score was calculated via 16-item measure SRD. We adopted the quadratic formula as the proper scoring rule for the CM score. In addition, we implemented $\lambda = 0.5$ for CM score calculation. Thus, the CM score will contain equal weight of their own score S and the average score $\bar{S}^{-r}$ of others who endorsed the same answer. The reward for the treatment condition was allocated to the two highest ranking winners based on their CM scores – who also included a valid e-mail address. (See appendix 11 for the result of treatment and control conditions respectively). The detailed calculation procedures are presented as follow:

Procedure 1: Score within each question $S(y, Z) = \frac{-\sum_{k=1}^{A}(y_k - Z_k)^2}{5}$, where y_k represents the prediction, Z_k represents the corresponding option's actual distribution.

Procedure 2: The corresponding $\overline{S}^{-r}$ can be calculated after procedure 1.

Procedure 3: For one respondent, CM score for each question $CM_{per\ question} = \lambda S + (1 - \lambda)\overline{S}^{-r}, where\ \lambda = 0.5$. One's final CM score would be: $CM_{final} = \frac{\sum_{k=1}^{n} CM_{per\ question}}{16}, where\ n = 16$.

Exploratory analysis

In exploring if sexual orientation, gender, status of LGBT friendship, can affect individuals evaluations on SRD, SDO, RWA, and PC a two sample t-test was conducted for both control and treatment conditions respectively. To explore the unique effects predictors on SRD, multilinear regression was conducted and tolerance statistics were attached. A tolerance statistic (tolerance value) can aid in detecting collinearity, to provide evidence of to what extent an independent variable can be explained by others. Weisburd & Britt (2007) suggest that tolerance value under (0.20) suggests that a model contains serious multicollinearity issues. In the present study a tolerance value explained the collinearity between the three variables of interest (SDO, RWA and PC) in predicting self-reported discrimination towards the LGBT-community. Moreover, for both control and treatment conditions respectively one-way ANOVA was be conducted in order to explore the existence of different measures' mean difference under the condition of control variables that contain more than two groups within. Additionally, between control and treatment conditions subgroup-analysis was conducted with the Mann-Whitney U test and two sample t-test based on a relatively larger sample size (N ≥ 20) in order to analyse sub-groups in detecting CM method's treatment effect on the four measures (SRD, SDO, RWA, PC) within different subgroups of our control variables.

4. Results

4.1 Summary statistics

Sample over view

Via online questionnaire 456 responses were collected. After exclusion of uncompleted questionnaires, a total of 227 surveys remained – of which treatment condition (N = 111) and control condition (N = 116) were compared in this study. Uncompleted questionnaires were excluded based on the invalidity due to unanswered questions by the respondent. By retaining these unfinished questionnaires, a bias in results would be presumed.

Baseline characteristics

Baseline characteristics are summarised in *table 2*. Comparing the main variables between treatment and control conditions shows a difference in means in favour of the control condition – with the exception of PC. For all other main outcomes - the mean was higher in the control–group. Both treatment and control means on SRD, SDO, and RWA are less than three (Neutral Score). The only mean score above neutral was for PC in the treatment condition.

Characteristics of the treatment- and control condition

The number of participates of both control and treatment conditions by continent, religion, sexual orientation, gender, LGBT-friendship status, income, education occupation and age are displayed in *table 1.* The gender distribution (treatment condition) between female (46.85%) and male (48.56%) was near even distribution. The geographic origins of the treatment condition had a total of 54.05% respondents from the European Union (EU), followed by North America (32.43%). For religion (treatment condition), 59.46% respondents identified with no religion, which accounted for the largest proportion of this sample. As for the sexual orientation under treatment condition, bisexuals and homosexuals were combined into non-heterosexual leading to a population of heterosexuals (45.95%) versus non-heterosexual (45.05%), which was an unexpected high proportion. The majority of respondents of the treatment conditions have friend(s) from the LGBT-community (81.98%). For control condition the distributions of gender, continent, religion, and LGBT friendship status are roughly identical with the exception of sexual orientation. For sexual orientation the majority of respondents are heterosexual (54.31%) versus non-heterosexual respondents (31.9%), which is considerably less than treatment condition (*See appendix 3 for graphical distributions*). In both control and treatment conditions above 80% of respondents reported they have friend(s) from the LGBT-community; majority respondents are students within age range of 25-50.

Table 1 Frequency distribution on control variables between treatment and control conditions.

Variables	Treatment Condition		Control Condition	
	Frequency (N=)	Percentage (%)	Frequency (N=)	Percentage (%)
Continent				
EU	60	54.05%	63	54.31%
Asia	8	7.21%	2	1.72%
Oceania	4	3.60%	3	2.59%
North America	36	32.43%	45	38.79%
South America	2	1.80%	3	2.59%
Africa	1	0.90%	-	-
Religion				
Christian	19	17.12%	23	19.83%
Catholic	9	8.11%	6	5.17%
Islam	2	1.80%	3	2.59%
Hinduism	N.A.	-	1	0.86%
Buddhist	N.A.	-	3	2.59%
Atheist	66	59.46%	64	55.17%
Judaism	N.A.	-	1	0.86%
Agnostic	12	10.81%	12	10.34%
Others	3	2.70%	3	2.59%
Sexual Orientation				
Heterosexual	51	45.95%	63	54.31%
Non-heterosexual	50	45.05%	37	31.90%
Other	6	5.41%	10	8.62%
Prefer not to say	4	3.60%	6	5.17%
Gender				
Male	54	48.65%	51	43.97%
Female	52	46.85%	53	45.69%
Other	4	3.60%	6	5.17%
Prefer not to say	1	0.90%	6	5.17%
LGBT-friend(s)				
Do not have	20	18.02%	22	19.13%
Do have	91	81.98%	93	80.87%
Income				
Prefer not to say	21	18.92%	30	25.86%
Below €1000	41	36.94%	46	39.66%
€1000 – €2500	28	25.23%	24	20.69%
€2500 – €4000	15	13.51%	10	8.62%
Above €4000	6	5.41%	6	5.17%
Education				
Prefer not to say	2	1.80%	7	6.03%
No Education	1	0.90%	1	0.86%
High School	25	22.52%	31	26.72%
MBO	6	5.41%	2	1.72%
HBO	5	4.50%	1	0.86%
Bachelor	44	39.64%	39	33.62%
Masters	25	22.52%	32	27.59%
PhD	3	2.70%	3	2.59%
Occupation				
Prefer not to say	1	0.90%	7	6.03%
Unemployed	9	8.11%	2	1.72%
Student	66	59.46%	69	59.48%
Employed	35	31.53%	38	32.76%
Age				
Below 25	0	0.0%	1	0.9%
25 – 50	69	62.2%	65	56.0%
50 – 75	40	36.0%	48	41.4%
Above 75	2	1.8%	2	1.7%

Table 2 Baseline characteristics of treatment vs. control condition for control variables. Self-reported discrimination (SRD), social dominance orientation (SDO), right-wing authoritarianism (RWA), perceived controllability (PC).

	Treatment Condition						Control Condition					
	N	Mean	Variance	SD	Min	Max	N	Mean	Variance	SD	Min	Max
Variables of Interest												
SRD	111.00	1.68	0.51	0.71	1.00	4.38	116.00	1.78	0.46	0.68	1.00	4.44
SDO	111.00	1.65	0.54	0.73	1.00	3.75	116.00	1.71	0.63	0.79	1.00	5.00
RWA	111.00	1.70	0.49	0.70	1.00	4.00	116.00	1.71	0.39	0.62	1.00	3.88
PC	111.00	3.18	2.24	1.50	1.00	5.00	116.00	2.80	2.22	1.49	1.00	5.00
Control Variables												
Gender	111.00	0.57	0.37	0.61	0.00	3.00	116.00	0.72	0.62	0.79	0.00	3.00
Education	111.00	4.32	2.78	1.67	0.00	7.00	116.00	4.15	3.81	1.95	0.00	7.00
Age	111.00	25.77	67.54	8.22	14.00	58.00	116.00	26.66	83.61	9.14	13.00	77.00
Income	111.00	1.50	1.23	1.11	0.00	4.00	116.00	1.28	2.21	1.10	0.00	4.00
Sexual Orientation	111.00	2.33	0.55	0.74	0.00	3.00	116.00	2.35	0.72	0.85	0.00	3.00
Occupation	111.00	2.22	0.39	0.62	0.00	3.00	116.00	2.19	0.56	0.74	0.00	3.00
Religion	111.00	2.12	3.03	1.74	0.00	7.00	116.00	2.34	3.69	1.92	0.00	8.00
LGBT-Friend(s)	111.00	0.82	0.15	0.39	0.00	1.00	116.00	0.81	0.16	0.39	1.00	1.00
Continent	111.00	3.36	0.61	0.78	1.00	6.00	116.00	3.50	0.50	0.70	2.00	6.00

4.2 Main hypotheses

Hypothesis 1 & 2

The associations between SDO, RWA and SRD

Hypothesis one and two were analysed using a Pearson's correlation in order to examine the correlation between RWA and SDO with SRD for both the treatment and control conditions. For the treatment condition (*table 3*), the variables of SDO, RWA, and SRD are significantly positively correlated. For the control condition, the variables of SDO, RWA, and SRD were similarly significantly positively correlated as well.

***Table 3** Pearson's correlation including treatment and control conditions on variables self-reported discrimination (SRD), social dominance orientation (SDO), and Right-Wing Authoritarianism (RWA).*

Treatment Condition	1	2	3
1. SRD	1.00		
2. SDO	0.62**	1.00	
3. RWA	0.75**	0.79**	1.00
Control Condition			
1. SRD	1.00		
2. SDO	0.68**	1.00	
3. RWA	0.74**	0.64**	1.00

*** p < 0.01, ** p <0.05, and * p <0.1.

Hypothesis 3

The association between PC and SRD

The Spearman's non-parametric test reported a positive moderate association between PC and self-reported discrimination for both treatment condition (r (111) = .32, *p* < .01) and control condition (r (116) = .31, *p* < .01).

Hypothesis 4

PC's mediation effect

All paths describing the analysed mediation effect in our model are illustrated in Figure 1. The mediation test results are presented in *table 4*. Path C' explores the mediation effect of PC on the relationship between predictors (SDO & RWA) and outcome SRD (hypothesis 4), results indicate that PC yields no mediation effect (SDO: [$\beta_{treatment}$ = 0.04, p > .05], [$\beta_{control}$ = 0.02, p > .05]; RWA: [$\beta_{treatment}$ = 0.03, p > .05], [$\beta_{control}$ = 0.02, p > .05]). Path A explores the association between predictors and PC presented a significant association for both predictors in association with PC: SDO ($\beta_{treatment}$ = 0.61, p < .05; $\beta_{control}$ = 0.40, p < .05) and RWA ($\beta_{treatment}$ = 0.59, p < .01; $\beta_{control}$ = 0.64, p < .01). Path B explores the association between PC and outcome (SRD) did not yield any significant results in our models. The direct association between predictors (SDO & RWA) and outcome (SRD) is explored in path C. In path C RWA ($\beta_{treatment}$ = 0.73, p < .01; $\beta_{control}$ = 0.78, p < .01) has a stronger association based on the significant

higher coefficients for both control and treatment condition in contrast with SDO, ($\beta_{treatment}$ = 0.57, $p <$ .01; $\beta_{control}$ = 0.56, $p < .01$) which implies a relative weaker direct effect on SRD.

Table 4 Mediation effect treatment and control conditions. Path A - predictor to mediator, path B - mediator to outcome, path C - total effect, and path C' - indirect effect (mediation effect).

Mediation effect	Predictors	Outcome	A	B	C	C' Indirect	Indirect Effect 95% CI	
Treatment Condition	SDO	SRD	0.61**	0.06	0.57***	0.04	-0.01	0.08
	RWA		0.59***	0.05	0.73***	0.03	-0.01	0.07
Control Condition	SDO	SRD	0.40**	0.06*	0.56***	0.02	-0.01	0.06
	RWA		0.64***	0.04	0.78***	0.02	-0.02	0.06

*** p < 0.01, ** p <0.05, and * p <0.1.

Hypothesis 5

 CM's treatment effect

To examine if CM has an effect on the measures of self-reported discrimination, SDO, RWA, and PC, Mann-Whitney U tests were conducted. No significant differences were observed between control and treatment conditions. PC appears to be the only variable that yields a near significant result at a significance level of $p = .051$ (see *table 5*).

Table 5 Summarised results on Mann-Whitney U-tests conducted on SRD, SDO, RWA, and PC in order to analyse treatment and control conditions. Extensive table can be found in appendix 9.

Mann-Whitney U test	SRD		SDO		RWA		PC	
	Z-value	P-value	Z-value	P-value	Z-value	P-value	Z-value	P-value
Control Condition N = 116	1.62	0.106	0.57	0.568	0.55	0.583	-1.95	0.051*
Treatment Condition N = 111								

*** p < 0.01, ** p <0.05, and * p <0.1.

4.3 Exploratory data analysis

Two sample T-tests

Influence of sexual orientation, gender, and the LGBT friendship status on SRD, SDO, RWA, and PC.

Two sample t-tests were conducted in exploring whether influence of sexual orientation, gender, and the LGBT-friendship status could influence the mean scores of measures SRD, SDO, RWA, and PC for treatment and control conditions within. Results are summarised in *appendix 4* (descriptive data) and *appendix 10* (graphical data).

The influence of sexual orientation

The analysis of sexual orientation's influence on SRD, SDO, RWA, and PC was performed using two-sample T-tests (see *appendix 4*). For this analysis, the option 'Bisexual' (N = 47) and 'Homosexual' (N = 40) were

combined into 'Non-Heterosexual' (N = 87). The reported alternatives of 'Other' (N = 16) and 'Prefer not to say' (N = 10) were dropped from the sample, as these options were undefined. Measures SRD and PC yield significant results for both control ($N_{heterosexual}$ = 63, $N_{non-heterosexual}$ = 37) and treatment ($N_{heterosexual}$ = 51, $N_{non-heterosexual}$ = 50) conditions. Heterosexual respondents scored significantly higher on SRD and PC than non-heterosexuals respondents. The significant mean difference of RWA scores only occurs in control condition, where heterosexual respondents reported higher mean than non-heterosexuals.

The influence of gender

Reported answer "Other" (N = 7) and "Prefer not to say" (N = 10) were dropped from this sample as they were undefined. The stratification based on gender for control (N_{female} = 53, N_{male} = 51) and treatment condition (N_{female} = 52, N_{male} = 54) results for both conditions were nearly identical (*see appendix 4*). Findings indicate that male respondents' mean score of SRD and SDO are significantly higher than female. The other two measures (RWA and PC) stratified by gender were insignificant for treatment and control conditions.

The influence of LGBT friendship status

The results from the treatment condition ($N_{do\ not\ have}$ = 20, $N_{do\ have}$ = 91) and control condition ($N_{do\ not\ have}$ = 22, $N_{do\ have}$ = 94) are nearly identical (see *appendix 4*). Findings indicate individuals having friend(s) from the LGBT community score relatively lower on measures SRD, SDO, and RWA, than respondents that do not have LGBT friend(s). The measure of PC was insignificant for both conditions.

Multilinear models in detecting the unique effects of SDO, RWA and PC have on SRD

Table 6 illustrates results of the multilinear regression. Considerable collinearity issue did not occur within our multilinear models. PC had no impact on outcome measure SDR in both models. For both control conditions, model 1 and model 2, results indicate a same moderate association between SDO and SRD ($\beta_{model\ 1}$= $\beta_{model\ 2}$= 0.30, *p* < .01). Whereas upon comparing the treatment conditions, SDO no longer predict SRD. In both conditions, RWA appears to be a strong predictor of SRD (*control condition:* $\beta_{model\ 1}$= 0.56, *p* < .01; $\beta_{model\ 2}$ = 0.55, *p* < .01 vs. treatment condition: $\beta_{model\ 1}$= 0.69, *p* < .01; $\beta_{model\ 2}$= 0.68, *p* < .01).

Table 6 Multilinear models to analyse the unique effects of social dominance orientation (SDO), right-wing authoritarianism (RWA), and perceived controllability (PC) on self-reported discrimination (SRD).

Predicting discrimination towards the LGBT community.	Model 1 β (Tolerance Value)		Model 2 β (Tolerance Value)	
Predictor	Treatment	Control	Treatment	Control
SDO	0.08 (.38)	0.30 (.59)[***]	0.06 (.37)	0.30 (.59)[***]
RWA	0.69 (.38)[***]	0.56 (.59)[***]	0.68 (.38)[***]	0.55 (.58)[***]
PC	-	-	0.04 (.91)	0.03 (.93)

[***] $P < 0.01$, [**] $P < 0.05$, [*] $P < 0.1$

One-way ANOVA analysis on control variables

One-way ANOVA was performed to detect the effect of control variables' different groups. This analysis was performed on variables that contained more than two groups within. Levene's test was performed on all variables in order to detect homogeneity of variance. The evidence of homogeneity of variance allowed us to perform one-way ANOVA in order to explore the mean differences per measurement under the conditions of control variables. The following variables were included in our one-way ANOVA: continent, religion, income, education, age, and occupation. Levene's test and one-way ANOVA were conducted on each of the control variables mentioned above. Post-hoc comparison via Tukey's test were conducted once one-way ANOVA generates significant results. Detailed explanations of Levene's test, one-way ANOVA, and Tukey's test are presented in appendix 5-8.

Treatment condition's results of post-hoc comparison on the effect of continent showing that respondents from South America scored higher in both SRD (M = 4.16, SD = 0.45) and RWA (M = 3.81, SD = 0.46), and significantly different from the means of remaining continents (*See appendix 5*). For religion only control condition generates significant results. Individuals with Hinduism as religion score the highest in SRD (M = 3.00, SD = 0.65), which is significantly different from individuals that follow religions such as Atheist (M = 1.66, SD = 0.08), Agnostic (M = 1.64, SD = 0.19), and Judaism (M = 1.13, SD = 0.65). Atheist and Agnostic respondents' SRD means are significantly different from Christian respondent (M = 2.12, SD = 0.14). Based on RWA scale measures, Hindu respondents scored the highest (M = 3.06, SD = 0.54), while individuals that adhere to Judaism scored the lowest on RWA (M = 1.31, SD = 0.55), (*see appendix 6*).

Under control condition participants with an monthly income range of 2500 to 4000 euro significantly scored the highest on SDO (M = 2.34, SD = 0.95) compared with participants from lower monthly income ranges: 1000-2500 euro (M = 1.49, SD = 0.59) and below 1000 euro (M = 1.64, SD = 0.75) (*see appendix 7*). Moreover, education under control condition participants who did not finish any education (M = 3.06, SD = (NA)) scored highest on RWA, whereas individuals with high school education (M = 1.52, SD = 0.45) scored the lowest (*see appendix 8*). No significant mean differences were detected with Levene's test and one-way ANOVA on the influence of other control variables (age and occupation) on SRD, SDO and RWA.

Sub-group analysis in detecting Choice-matching's treatment effect

Sub-group analysis will be performed on the variables of interest (SRD, SDO RWA and PC) by control variables (continent, income, religion, occupation, education) based on Mann-Whitney U analysis and two-sample T-test to analyse the effect of CM method. Only for measures PC and SRD, significant evidence of CM method's treatment effect were detected.

Sub-group analysis on self-reported discrimination

The Mann-Whitney U test yields a significant result between the mean SRD scores of the control condition (N = 63) and treatment condition (N = 60) within the European Union subgroup ($p < .01$), it can be seen from *appendix 9*. This result indicates that the CM method has an impact on a respondent from the European Union with regard to SRD towards the LGBT-community. Where after a two-sample T-test was conducted and generates no significant result (Control vs. Treatment: $M_{control}$ = 1.89, SD = 0.72 vs. $M_{treatment}$ = 1.65, SD =0.65, Mean Difference = 0.23; $p < .01$),

Subgroup analysis on perceived controllability

Mann-Whitney U test detected evidence of CM method's treatment effect within five sub-groups. The results can be seen in *table 7*: 1000 – 2500 euro monthly income level ($N_{control}$ = 24; ($N_{treatment}$ = 28; $p < .05$), occupational status of employed ($N_{control}$ = 38, $N_{treatment}$ = 35; $p < .05$), educational levels of high school (($N_{control}$ = 31, $N_{treatment}$ = 25; $p < .05$), bachelor (($N_{control}$ = 39, $N_{treatment}$ = 44; $p < .05$), and masters (($N_{control}$ = 32, $N_{treatment}$ = 25; $p < .01$).

Table 7 Mann-Whitney U test on CM's treatment effect on PC based within subgroups.

Mann-Whitney U test				
Sub-groups (PC)	Control (N)	Treatment (N)	Mann-Whitney U test	
			Z	P-value
1. Income (1000 – 2500 euro)	24	28	-2.00	P < 0.05
2. Occupation: Employed.	38	35	-2.13	P < 0.05
3. Education: High school	31	25	-2.27	P < 0.05
4.Education: Bachelor	39	44	-2.56	P < 0.05
5. Education: Masters	32	25	2.58	P < 0.01

Table 8 Two-sample T-test for sub-groups between control and treatment condition.

Two-sample T-test				
Sub-groups (PC)	**Control** **(M, SD)**	**Treatment** **(M, SD)**	**Two-sample T-test**	
			Mean Difference	**P-value**
1. Income (1000 – 2500 euro)	2.33(1.43)	3.18(1.59)	-0.85	P < 0.1
2. Occupation: Employed.	2.53(1.43)	3.29(0.26)	-0.76	P < 0.05
3. Education: High school	2.13(1.48)	3.04(1.54)	-0.91	P < 0.05
4.Education: Bachelor	2.67(1.46)	3.55(1.47)	-0.88	P < 0.01
5. Education: Masters	3.56(1.22)	2.60(1.41)	0.96	P < 0.01

To examine the exact mean differences of PC scores in terms of different treatments, two-sample t-tests were conducted for the same five corresponding sub-groups. The results can be seen in in *table 8*. Sub-groups respondents from treatment condition: employed (M = 3.29, SD = 0.26), high school (M = 3.04, SD = 1.54), bachelor (M = 3.55, SD = 1.47) have relatively higher PC mean scores than the corresponding sub-groups from control condition (mean differences = - 0.76, *p* < .05; - 0.91, *p* < .05; mean differences = - 0.88, *p* < .01). 'masters' of the control condition had a relatively higher PC mean score (M = 3.56, SD = 1.22) than the corresponding sub-groups from the treatment condition (M = 2.60, SD = 1.41) by 0.96 (*p* < .01).

5. Discussion

5.1 SRD, SDO, RWA, and PC.

The effect of RWA and SDO on SRD

For both treatment and control conditions the measures of SDO and RWA were found to be positively correlated with SRD, which supports hypothesis 1 and 2. This indicates that individuals who are submissive towards authorities and prefer inequality between social groups appear to have more tendency of discriminatory behaviour towards the LGBT community or its members.

The effect of PC on SRD

PC describes the phenomenon in discriminatory behaviour where certain individuals' discriminatory behaviour is expressed in the form of a targeted perception where certain characteristic of a targeted individual is perceived to be controllable (e.g. being overweight). In our survey respondents were asked to provide an answer for the question to what extent they agree or disagree that being a member of the LGBT-community was a choice made by an individual. The positive and moderate associations between PC and SRD from both control and treatment conditions support hypothesis 3: PC is positively correlated with SRD towards the LGBT-community. Result indicates the more individual perceive being member of the

LGBT-community is controllable, the more tendency of discrimination towards the LGBT-community is present. Thus, the tendency to discriminate towards the LGBT-community based on PC is a common phenomenon in this study. Indicating that the perception that being "a part of the LGBT-community is controllable" plays a part in discriminatory behaviour towards the LGBT-community, Thus, PC is a valid predictor of SRD.

Could PC mediate the correlation of SDO/RWA and SRD?

SDO and RWA are salient predictors of SRD. Yet a mediator of these two characteristics leading to (self-reported) discriminatory behaviour remains unestablished. PC could be explored as a possible mediator for the discrimination process towards the LGBT-community. Simplified this indicates that PC could mediate the predictors of SDO and RWA in expressing SRD. The assessment of mediation effect was based on different paths to explore the indirect effect PC has in between the predictors (SDO & RWA) and outcome (SRD). For both control and treatment conditions significant effect was detected for path A: predictors – mediator and path C: predictor – outcome. No significant effect was found for path B: mediator – outcome as well as PC's indirect effect on path C' in predicting outcome SRD, indicating that PC is considered to not be a mediator. Thus, no evidence can be found in supporting hypothesis 4: PC can mediate the correlation between individuals scoring high in SDO and SRD, as well as RWA and SRD. This implies that for future research other factors need to be explored.

5.2 Treatment effect of Choice-matching Method

Choice-matching method's overall treatment effect

No significant result was detected by the Mann-Whitney U test. This indicates that in both treatment and control conditions, the distributions of the mean score of measures SRD, SDO, RWA, and PC were not different from each other. Therefore, this finding cannot support hypothesis 5: Respondent's distributions of mean scores on SRD, SDO, RWA, and PC from treatment and control conditions are significantly different from each other. Therefore, a detailed analysis based on sub-groups by control variables was conducted.

Choice-matching method's treatment effect within Sub-groups

Mann-Whitney U tests were conducted for all measures (SRD, SDO, RWA, and PC) throughout the sub-groups of control variables by two treatment conditions. We detected CM's treatment effect from measure SRD within subgroup: continent (European Union); measure PC within sub-groups: income (1000-2500 euro monthly), occupation (employed), and education (high school, bachelor, and masters).

Moreover, we explored the directions of the treatment effect of CM whether the sub-groups yield significant evidence of CM's treatment effect. This aspect was assessed via two-sample t-tests on the mean differences of measures SRD and PC. Only PC yields significant mean differences within four subgroups: employed, high school, bachelor and masters. Regarding PC's mean scores within subgroups: employed, high school, and bachelor in the treatment condition a higher mean score, which are above natural score (3). On the other hand, for the control condition PC means are both lower than neutral score, which indicates CM method's treatment effect have elicited higher evaluations of PC. Only for the masters' sub-group, CM's treatment effect turns out to have the opposite influence on the mean of PC.

CM method's treatment effect can be captured within sub-groups as was the case for PC in our study. PC of the LGBT-membership somehow represented the degree of tolerance towards the LGBT-community. This implies that perceiving the LGBT-community membership as controllable (scoring high on PC) can be interpreted as socially undesirable. In order to maintain a socially acceptable impression due to SDB - respondents are expected to under-report their evaluation on PC. This coincides with our study results in our sub-group analysis regarding the means on PC being lower in the control condition, while the treatment condition yielded a higher mean of PC in subgroups as shown above. Therefore, indicating that in the treatment condition respondents were relatively more honest on PC as a socially undesirable topic with the application of CM method. This emphasises the evidence that CM's treatment effect can overcome SDB. Our result further coincide with the assumption "more is better" on socially undesirable topics: "When under-reported results are expected, then a measure's relatively higher mean is considered as more valid (Krumpal, 2013).

5.3 Exploratory data

Sexual orientation, gender, and LGBT friendship status
Heterosexual respondents scored higher on SRD, RWA (only for control condition), and PC than non-heterosexual respondents. As non-heterosexual individuals are in-group members of the LGBT-community at the least a lower level of SRD can be expected. Male respondents scored higher on SRD and SDO than female respondents. The difference on SDO was potentially due to measure SDO survey questions being specifically related to traditional gender roles. It is notable that gender has no effect on RWA, as past research has generated mixed results of gender differences on RWA. In the study of Whitley (1999) women score higher, while in the study of Lippa (1995) women scored lower on RWA than men. Moreover, the study of Nagoshi, Terrell, & Nagoshi (2007) found no gender difference on RWA. This indicates beyond gender, more factors can affect RWA (e.g., political ideology). Furthermore, people that do not have LGBT friend(s) scored higher on the three main measures SDO, RWA, and SRD. It is intriguing that individuals who have LGBT friend(s) probably have higher tolerance towards the LGBT-community, which demonstrates such result.

Continent and religion

In the treatment condition South America scored the highest on SRD, while North America scored the lowest. Such finding perhaps is based on the fact that South America in general is a less developed continent than North America (Mathy, 2002), which indicates that people from South America are more likely to be narrow minded towards the LGBT-community.

Hindu respondents predominately contain the most characteristics of RWA and have more tendency of discrimination towards the LGBT-community (SRD). As people from a Hindu background contain more characteristics of RWA they tend to have more hostile attitudes towards homosexuality (Hunsberger, 1996). Based on these two measures individuals that reported as Christian scored higher than Atheist individuals, this might due to these two religions being opposites.

Income and education level

Income level did have a significant effect on measure SDO in control condition. Individuals that reported a monthly income level of 2500 – 4000 euro scored significantly higher than 1000 – 2500 euro individuals, while below 1000 participants scored slightly higher than 1000 – 2500 people. This finding states that lower income individuals contain lesser characteristics of SDO, which is the opposite of Carvacho, Zick, Haye, González, Manzi, Kocik, & Bertl (2013)'s finding regarding income and SDO. This opposite finding might relate with our sample (e.g. small sample size, most respondents were students). Moreover, education level has significant effect on RWA under control condition: individuals did not finish any education reported the highest score on RWA while participants with High school and bachelor education level scored significantly lower, this finding coincides with a survey research conducted by Carvacho *et al.* (2013). This implies that the higher education level, the lesser desire for the established authority is present (Altemeyer, 1981).

5.4 RWA-findings related implications

Authoritarian figures

Based on our own findings in this study concerning the strong association of RWA with SRD – we can infer that individuals scoring high on RWA, are more likely to discriminate towards the LGBT-community. People identifying with a strong RWA are more likely to follow authorities and view others who do not follow this concept as problematic (Altemeyer, 1981; Altemeyer, 1988). Therefore, resulting in discriminatory behaviour towards the LGBT-community. The strong association of RWA with SRD implied that individuals that scored high on RWA are more likely to discriminate (Asbrock *et al.*, 2010; Bäckström & Björklund, 2007). Based on the concept of RWA people that identify with more characteristics of RWA, are more likely to follow authoritarian figures. For example, if a government or a policymaker (e.g. politician) made a negative comment or policies towards the marginalized group (e.g. the LGBT-community), consequently

misleading people who are high on RWA and indirectly support the discrimination towards the LGBT-community (Knauer, 2020).

Another example highlighting discriminatory behaviour can be seen in the restriction of blood donation for homosexuals and bisexual men, which are generated by the government. The government believes homosexual and bisexuals have a higher risk of spreading by contaminating blood products of the blood blank (Galarneau, 2010). As the authority, the government decided this specific restriction. Therefore, individuals with a high RWA could be influenced. Consequently, individuals with a high RWA are more likely to discriminate against the homosexuals or bisexuals in the context of blood donation. The problem of RWA is the ambiguity of the concept. People with high RWA will respond to authoritarian figures regardless, whether the authority states something beneficial or disadvantageous. The current study highlights the needed value of implementing the recognition of RWA in policymaking in order to develop an appropriate public environment for the LGBT-community.

5.5 SDO-findings related implications

Intergroup Relation

Our findings suggest that SDO was identified as a predictor of SRD towards the LGBT-community. The higher an individual is fulfilled with the preference of inequality between social groups, the more discriminatory tendency towards members of the LGBT-community, or the LGBT-community as group. SDO can be directly linked with dynamics between groups: intergroup relations, which can be defined as a core component of SDO (Hewstone, Rubin, & Willis, 2002). Furthermore, Intergroup relations can be influenced by approaches via individual and intergroup perspectives (Hewstone *et al.*, 2002), which indirectly indicates the improvement of intergroup relation could thereby reduce SRD from individual and intergroup perspectives.

Individual Perspective

As individuals with a higher SDO tend to categorise members of their out-groups stricter, the consequent discrimination that ensues based on that deviant categorisation is more enforced (Hewstone *et al.*, 2002). By improving the individual perspective towards intergroup relations, the potential to reduce the biased views of intergroup relations may improve. For example, educating individuals, especially children, in order to raise awareness of the concept of groups (and group relations) on multiple perspectives (Bigler, 1999; Bigler & Liben, 1992). This makes the concept of group categorisation weaker. Therefore, the discrimination based on SDO and deviating categorisation of out-group members (or groups) might be reduced resulting in improvement of discriminatory behaviour for individuals with a prospective to develop high SDO.

Intergroup Perspective

The emphasis on the uniqueness of out-group's members and their perceived uniqueness motivate intergroup bias for individuals with SDO. Therefore, resulting in a distinction between in-group and out-group (Hewstone *et al.*, 2002). This intergroup bias consequently results in the motivation of discriminatory behaviour, as the distinction between groups is a trigger for members of the in-group, especially members with a higher SDO. In order to overcome intergroup bias and discrimination between in-group and out-group members/groups - individuals of in-groups should, for example, make friends with individuals from out-groups (Pettigrew, 1997; Phinney, Ferguson, & Tate, 1997). Making friends with out-group members (such as members of the LGBT-community) is considered beneficial in overcoming the intergroup bias. As interactions with others generates interpersonal focus, this improves intergroup bias and eventually results in lower discrimination based on the diminished distinction between in-group and out-group (Bettencourt, Brewer, Croak, & Miller, 1992).

5.6 PC-findings related implications

Our findings suggest a positive association between PC and SRD towards the LGBT-community. A possible explanation to this association could originate due to a lack of access to information regarding the membership of the LGBT-community in daily life. This lack of information was confirmed by our own literature search as information on PC over LGBT-membership was relatively limited, especially on bisexuals and transgender individuals. Our findings coincide with the past literature discussed in paragraph 2.7, which confirmed the positive association between PC and prejudice (King, 2001; Mitchell & Dezarn, 2014; Whitehead, 2014). For example, high PC over homosexuality leads to the perception that homosexuality is controllable. However there is no scientific evidence supporting any possible approaches to reverse homosexuality into heterosexuality (Gonsiorek & Weinrich, 1991). Indicating that there is no proper evidence supporting that homosexuality is individually controllable. Based on these examples we advise that by providing the public information about this marginalised social group might improve an individual's PC at least from the perspective of homosexuality to possibly reduce discrimination. Furthermore, we advise that the study of bisexual and transgender populations need future developments.

5.7 Limitations and Recommendations

Social desirability bias

In the current study, the presence SDB in regard to sensitive subjects had to be accounted for on a hypothetical level. As SDB was not quantified to assess the effect of SDB on the measures (SRD, SDO, RWA, and PC). Consequently, we are limited in quantifying SDB's actual negative influence on our results.

Therefore, we recommend future studies to include the well-established measure called: Marlowe-Crowne Social Desirability Scale (Rudmin, 1999). The application of this scale will aid more insights in the clarification to what extent the actual magnitude of CM method's truth-inducing effect counteracts SDB.

Perceived controllability

Our results did not detect any mediation effect on the association of SDO and RWA on SRD. Theoretically, this suggests that PC might not be a qualified mediator in explaining the corresponding associations. As there is no well-established method to measure PC in the existing literature (Kushner, Riggs, Foa, & Miller, 1993). This indicates that in the current study PC cannot explain why higher scoring individuals tend to have more tendency of discrimination towards the LGBT-community. This leaves space for future research to apply other potential measures.

Self-reported discrimination

In this study the outcome variable is SRD towards the LGBT-community. This measure is considered an index of realistic actual discriminatory actions, but cannot fully reflect the actual process of aforementioned actions. The evidence on individuals reporting a tendency of discrimination and actually committing this discriminatory behaviour is generally studied by other researchers. Our study only focused on the self-reported behaviour. Thus, for future research in examining the actual discriminatory behaviour – the combination of a survey and experimental observations are suggested in exploring the concept of SRD and actual discrimination towards the LGBT-community.

Distribution of the survey

The survey was distributed via multi-channels such as websites like: Reddit, SurveyCircle, and SurveySwap. The population of our sample sizes were predominantly students. Moreover, posting the survey on the sub-channel "LGBT" of Reddit probably resulted in the unexpected higher proportion of non-heterosexual respondents (treatment condition: 45.05%; control condition: 31.90%) in our sample. While in reality the majority of the general population are heterosexual individuals. Future research should consider a wider range of options in acquiring respondents via social media and other platforms to generate a more diverse sample in avoiding a biased population, which could affect data.

Sample Size

Our study was based on small sample sizes (treatment condition: N = 111; control condition: N = 116). The number of sample size within control variables' sub-groups are unbalanced in the current study. Therefore, this might have affected the results of our one-way ANOVA and Mann-Whitney U test, while comparing the subgroups within the various control variables. Moreover, a larger sample size would result in even distribution of sub-groups within control variables increasing the statistical power. A larger sample

size would therefore contribute to the power of one-way ANOVA and Mann-Whitney U test in our study to increase the power of statistical findings.

6. Conclusion

The current study reports strong associations of RWA and SDO on discrimination towards the LGBT-community coinciding with the findings of Asbrock *et al.* (2010), Bäckström & Björklund (2007), and Case *et al.*, (2000). Moreover, the confirmation of our third hypothesis indicated that PC is moderately and positively associated with SRD. Despite this association between PC and SRD, PC did not have a significant impact in mediating the association between predictors (SDO & RWA) and outcome (SRD). This problem might be exemplified by our own survey design where PC was a one-item measurement, in comparison with other sixteen-item measurements that are able to generate more accurate data.

No evidence was found to support CM methods truth-inducing effect on the perspective of control and treatment condition in our study. Despite no evidence of treatment effect, significant results were present from the perspective of sub-group analysis. CM's truth-inducing effect were found in six subgroups: continent of European Union, monthly income level of 1000 – 2500 euro, employed occupation status, education level of high school, bachelor, and masters. These results confirmed the presence of CM method's truth-inducing effect in the current study.

According to our findings, non-heterosexual and heterosexual individuals yield significant differences on all the measures explored. Based on the unbalanced proportion of heterosexuals and non-heterosexuals in our sample, the outcome variable SRD is more likely to be biased. In our study SRD represents the discriminatory behaviour towards the LGBT-community. As non-heterosexuals members are considered as in-group members of the LGBT-community, they have a lesser tendency to discriminate their own social group. Therefore, the results of CM's truth-inducing effect regarding variable SRD might be biased.

Individuals who have a high respect towards the conventional values and tend to be submissive towards authoritarian rule yield a significant higher tendency to discriminate against members of the LGBT-community, or the LGBT-community as a whole group. Based on our findings we can conclude that individuals who contain relatively more of RWA characteristics coincide with previous research. This indicates that RWA is correlated with the discriminatory behaviour (Bilewicz *et al.*, 2017; Case *et al.*, 2000). Group dynamics in the context of SDO expressed as the opposition of between-group equality enhances the tendency of discrimination towards the targeted group (Case *et al.*, 2000; Levin & Sidanius, 1993; Pratto *et al.*, 1994; Sumajin *et al.*, 2001). Our study findings indicate that SDO is another predictor of SRD towards the LGBT-community. Moreover, in our study we found a positive association between PC and

SRD. Indicating that people who perceive the membership of the LGBT-community individually more controllable result in more tendency of discriminatory behaviours towards the LGBT-community. This finding coincides with older studies on other social groups that are perceived as immoral, and therefore were more likely to experience discrimination (King, 2001; Mitchell & Dezarn, 2014).

In conclusion, in our study RWA turns out to be the strongest predictor of SRD compared with SDO and PC. PC was the weakest predictor and did not have significant impact on mediating the association between predictors and outcome, implying that PC might not be a qualified mediator in explaining corresponding associations. This leaves space for other potential factors.

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8. Appendix

Appendix 1: Assumptions of Choice-matching method

Cvitanic et al (2019) stated the four assumptions of CM are as follows:

Assumption 1: **Common Prior**	The existing answer A = (1, 2, 3, 4, 5) respondents know the situation that each single option out of five will be chosen by different type of individuals exists.
Assumption 2: **Non-degeneracy**	Respondents know that in the sample, each option will be chose, (the total number of respondents needs to be larger than the number of the available answer options), and all options have a chance to receive an honest answer.
Assumption 3: **Stochastic relevance**	Respondents with different corresponding reported answers yield different predictions.
Assumption 4: **Impersonal updating**	Respondents reported the same option yield the same prediction.

Treatment Condition	Control Condition
Introduction	**Introduction**
Dear participant,	Dear participant,
In this survey, you will be asked to complete a survey regarding social preference and the LGBT community. This survey will take approximately 8-10 minutes to complete.	In this survey, you will be asked to complete a survey regarding social preference and the LGBT community. This survey will take approximately 8-10 minutes to complete.
Your participation in this study is completely voluntary. **Please answer the survey truthfully**, as a <u>Truth Scoring Method</u> will be applied. **This method was invented by researchers from Massachusetts Institute of Technology (MIT) and Erasmus University Rotterdam**. <u>Honest answers will lead to a **higher score**</u> and in the end the top two participants will win €20 each. Your responses will be strictly confidential and anonymized. Data from this research will be reported only on an aggregated level. If at any time you have questions about the survey or the procedures, please feel free to contact me via 503077lx@student.eur.nl. Thank you very much for your time and support.	Your participation in this study is completely voluntary. Please answer the survey truthfully. Your survey responses will be strictly confidential and anonymized. Data from this research will be reported only on an aggregated level. If at any time you have questions about the survey or the procedures, please feel free to contact me via 503077lx@student.eur.nl. Thank you very much for your time and support.
You may now start the survey.	You may now start the survey.
Instruction:	**Instruction:**
Welcome to the statement questions, in this section each question contains <u>**two parts.**</u>	Welcome to the statement questions, in this section each statement question contains <u>**two parts**</u>.
Firstly, please select your answer from **the drop-down menu**. The answer is based on to what **extent** you agree with the statement.	**Firstly**, please select your answer from the **drop-down menu**. The answer is based on to what **extent** you agree with the statement.
Secondly, please insert an estimated frequency (**Prediction in %**) of how much you expect others would have chosen your selected answer. For this part, the answer must be **a valid number between 1 ~ 100.**	**Secondly**, please insert an estimated frequency (**Prediction in %**) of how much you expect others would have chosen your selected answer. For this part, the answer must be **a valid number between 1 ~ 100.**
Note: Your <u>**final score**</u> is associated with two factors from this section:	
- A score for how good your predictions were.	
- An average prediction score of other respondents who reported the same answer.	

Self-reported discrimination (SRD)

1. "If I found out one of my friends is gay/lesbian, I would start to keep distance with him/her". (R).

1	2	3	4	5
Strongly	Somewhat agree	Neither agree or	Somewhat disagree	Strongly Disagree

Agree		disagree		

2. "I do not interact in a regular way with bisexual individuals because they might switch the gender of their partners, which is morally wrong". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

3. "Sometimes my friends and I make fun of someone's gender identity". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

4. "I normally feel uncomfortable when I am around someone who I know is transgender I try to avoid a situation like this". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

5. "If I were to be a manager, I would consider hiring gay/lesbian employees but it would not be my priority". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

6. "If I found out my manager is gay/lesbian, I would somehow consider him/her less". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

7. "If I were a parent, I would try my best to avoid my kids from seeing same-sex couples making out in public". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

8. "If I were to be a business owner, e.g. hotel or restaurant, I would consider certain groups of people unstable, so I would tend to minimize the number of gay/lesbian and transgender customers in case they will damage my property". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

9. "If I were a father/mother, I would allow my children to play with kids who are adopted by gay/lesbian couples because I think those kids are as same as other kids".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

10. "In a flat-sharing situation, I am indifference between living with heterosexual or homosexual roommates. I wouldn't make an effort to pick a roommates specifically based on their sexual orientation".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

11. "If I were a father/mother, I am willing to educate my children that homosexuality is an acceptable alternative lifestyle".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

12. "I consider gay/lesbian pride as a chance for them to promote their self-affirmation, dignity, equality rights. I would like to join the activities to support them".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

13. "I tend to defend someone when they are discriminated because of their sexual orientation".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

14. "If I were to be an employee in the services industry, knowing the sexual orientation (gay/lesbian) of the customer would not change my attitude of offering services to them".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

15. "Harassing someone based on their gender identity is morally wrong, I would always try to help them out whenever it happens around me".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

16. "In election activities, I prefer to vote for the candidate who supports the LBGT community".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

Social Dominance Orientation (SDO)

1. "Some groups of people are simply inferior to other groups of people". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

2. "I prefer inequality between groups. If all groups were equally treated I will get less". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

3. "For my own well-being in life, I will step on other groups when it's necessary". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

4. "It will cause less problems if certain groups stayed low profile". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

5. "It is acceptable that certain social groups dominate other social groups". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

6. "The dominated social groups deserve fewer opportunities in comparison with the dominant groups". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

7. "Ideally, it is beneficial for society that some social groups are more dominant than others". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

8. "People in less dominant social groups are better off remaining in those groups and thus cause fewer problems in society". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

9. "Balancing social conditions between different social groups is worth the effort".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

10. "Different social groups deserve equal opportunities in order for everybody to be successful".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

11. "Balanced social group equality is ideal for a proper society".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

12. "Treating people equally will cause fewer problems for society".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

13. "All members of society deserve the same quality of services in life".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

14. "Group domination is a poor principle for an equal society".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

15. "Equal treatment of all social groups is beneficial for the whole society".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

16. "Dominated social groups deserve as much as dominating groups".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

Right-Wing Authoritarian (RWA)

1. "Married women are supposed to obey their husbands". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

2. "Moral fiber and traditional beliefs are the fundamental principles of our country, we should maintain it this way". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

3. "We must strictly follow the Biblical laws of God when it comes to principles such as: 'abortion', 'pornography', and 'marriage', and therefore firmly punish the people who break them". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

4. "For our own wellbeing, we should honor the rules left by our forefathers, obey the authorities' guidance, and get rid of the "rotten apples" that are ruining our country". (R)

1	2	3	4	5

Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

5. "Mighty leaders will break down the radical new ways, and punish the people who challenge their power, they are able to bring a bright future for our country". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

6. "Our country will fall apart if we don't put mighty leaders in power and let the troublemakers spreading their bad influences stay untouched". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

7. Old fashioned principles" are always right and can lead to a better life". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

8. "Judgments made by proper authorities in government and religion are always trustworthy". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

9. "Every country needs to have free thinkers that are brave enough to challenge and question traditional social values".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

10. "People from LGBT subgroups are as healthy, and have similar moral principles like others not from this group".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

11. "Every individual is free to have their own lifestyle with regard to religion, sexual preference, and other social topics".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

12. "Women should have the same freedom as men do with disregard to out-of-date gender-specific stereotypes".

1	2	3	4	5
Strongly	Somewhat agree	Neither agree or	Somewhat disagree	Strongly Disagree

| Agree | disagree |

13. "It is brave that the LGBT population is willing to stand up and defy "traditional family values".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

14. "Nudist camps are the sign of improved tolerance of traditional social norms".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

15. "We consider this certain type of individuals valuable: People who have the courage to challenge the government, doubt religion, and question "the ways things are supposed to be done".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

16. "People should create their own standards instead of standards based on the Bible, or other forms of religious guidance".

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

Perceived Controllability (PC)

1. "I believe being a member of the LGBT community is a choice made by individual". (R)

1	2	3	4	5
Strongly Agree	Somewhat agree	Neither agree or disagree	Somewhat disagree	Strongly Disagree

Demographic questions

Instruction:

Welcome to the final part of the survey; please answer the following demographic questions.

1. Please indicate your gender:

1	2	3	4
Male	Female	Prefer Not to Say	Other

2. What is the highest level of education you have achieved until now?

1	2	3	4	5	6	7	8
High School	Secondary Vocation Education / MBO	University of applied science / HBO	Master	Bachelor	PhD	I did not finish any education	Prefer not to say

3. In which country do you currently reside?

* All countries of the world were listen in a drop down menu

4. How old are you?
(Specify in a number)

5. What is your monthly net income range?

1	2	3	4	5
Below €1000	€1000 – 2500	2500 - 400	Above €4000	Prefer not to say

6. Do you have friends from LGBT community

1	2
Yes	No

7. Please indicate your sexual orientation

1	2	3	4	5
Heterosexual	Homosexual	Bisexual	Other	Prefer not to say

8. What is your occupation?

1	2	3	4
Student	Employed	Unemployed	Prefer not to say

9. What is your current religious affiliation?

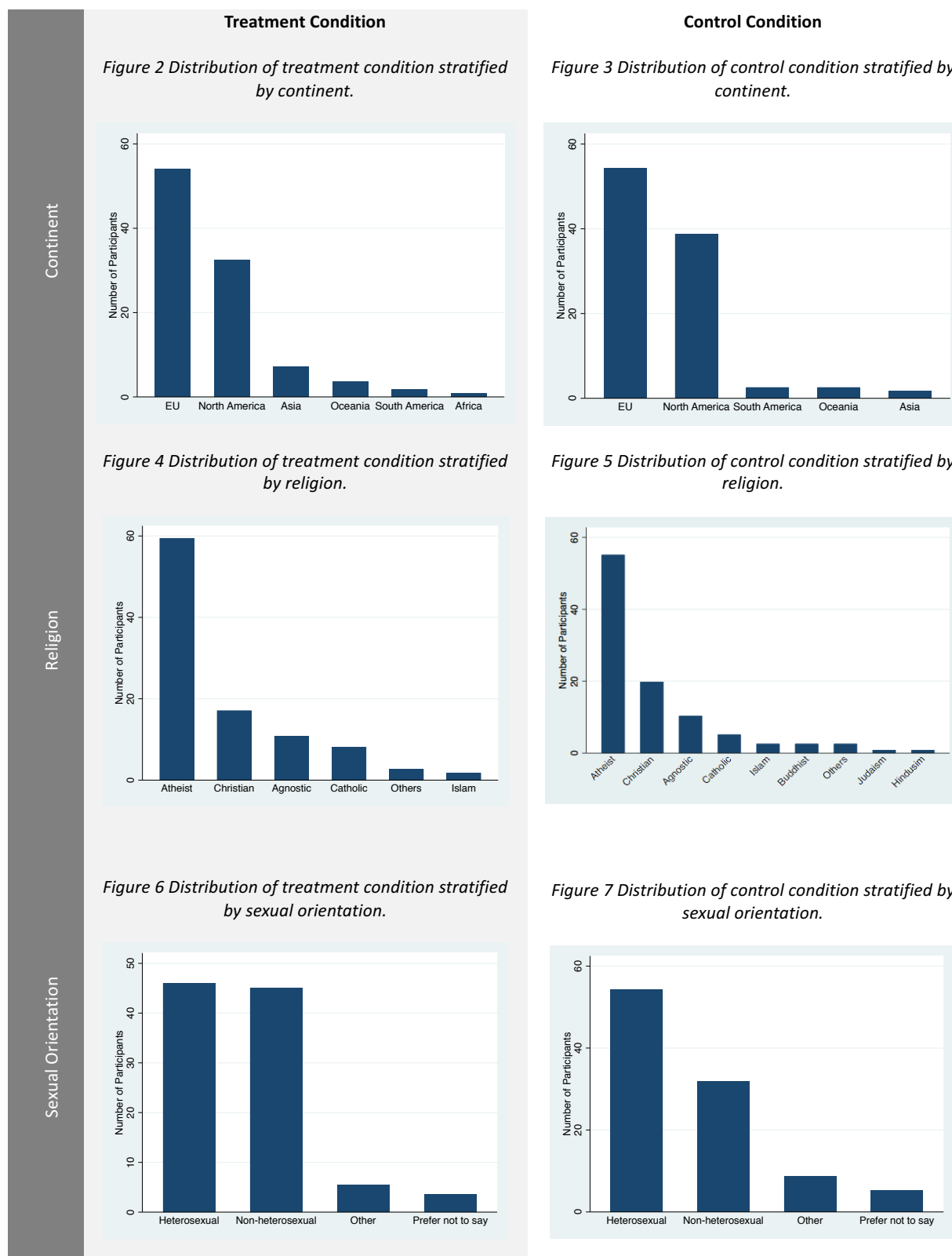| 1	2	3	4	5	6	7	8	11	12	13	14
Christian	Catholic	Islam	Hinduism	Buddhist	Atheist	Scientology	Judaism	Mormonism	Agnostic	No religion	Other: Please specify.

10. Please leave your e-mail address below, you may have a chance to win the price* (Not interested? You can simply skip this page by pressing the button down below).

(Enter e-mail here)
_____

*Only for treatment survey

Thank you for your time to participate this survey.
Your response has been recorded.

Appendix 3: Distributions of treatment and control conditions by control variables.

Treatment Condition	Control Condition
Figure 2 Distribution of treatment condition stratified by continent.	*Figure 3 Distribution of control condition stratified by continent.*

Continent

Figure 4 Distribution of treatment condition stratified by religion.	*Figure 5 Distribution of control condition stratified by religion.*

Religion

Figure 6 Distribution of treatment condition stratified by sexual orientation.	*Figure 7 Distribution of control condition stratified by sexual orientation.*

Sexual Orientation

56

Figure 8 Distribution of treatment condition stratified by gender.

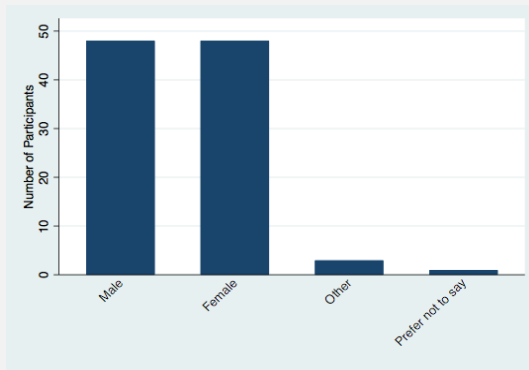*Figure 9 Distribution of control condition stratified by gender.*

Figure 10 Distribution of treatment condition stratified by friends with LGBT-members.

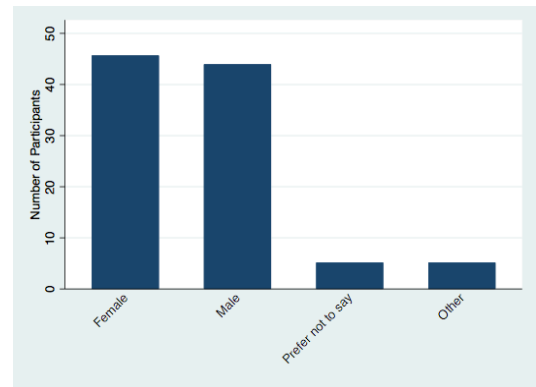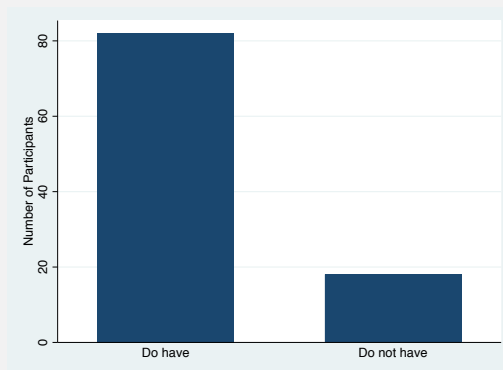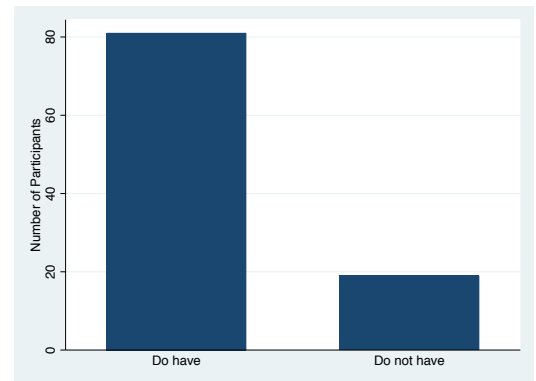*Figure 11 Distribution of control condition stratified by friends with LGBT-members.*

Figure 12 Distribution of treatment condition stratified by Education.

Figure 13 Distribution of control condition stratified by Education.

Gender

LGBT Friendship Status

Education

Figure 14 Distribution of treatment condition stratified by income.

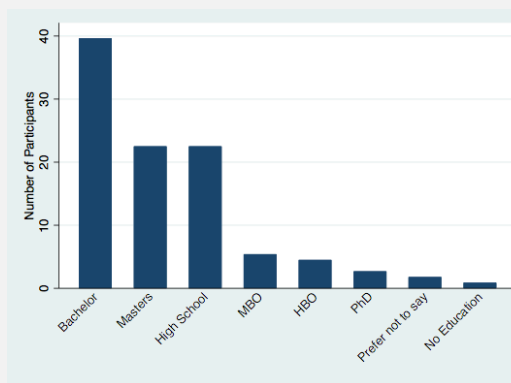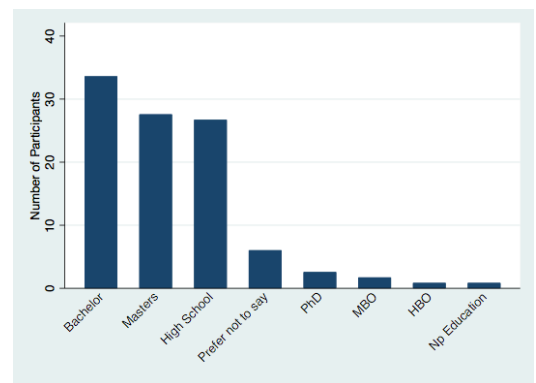*Figure 15 Distribution of control condition stratified by income.*

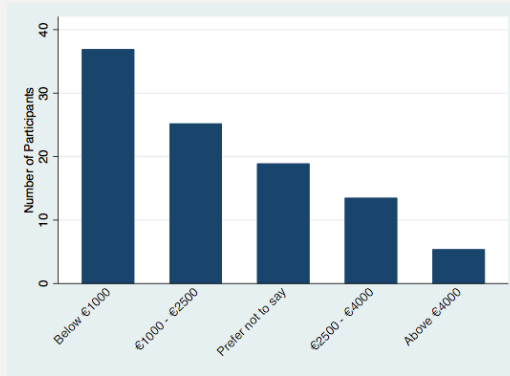*Figure 16 Distribution of treatment condition stratified by occupation.*
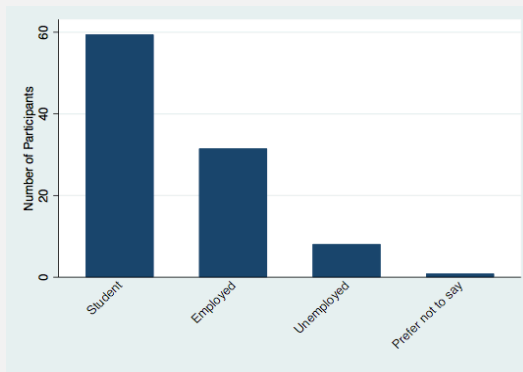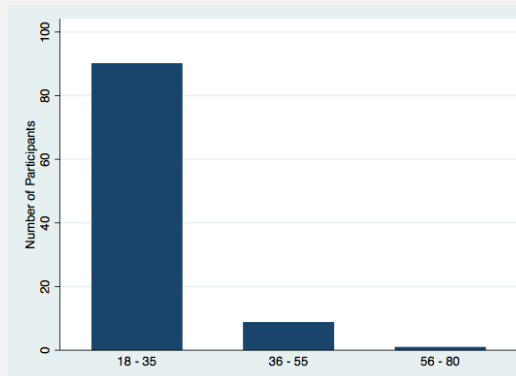

Figure 17 Distribution of control condition stratified by occupation.
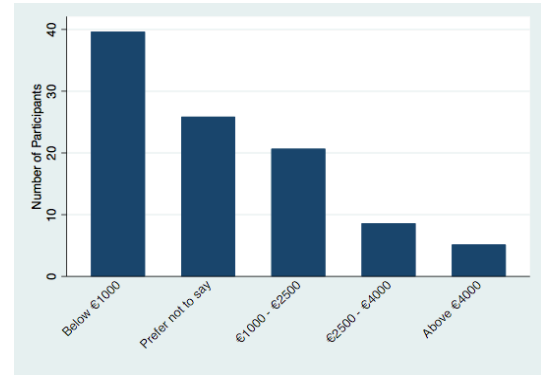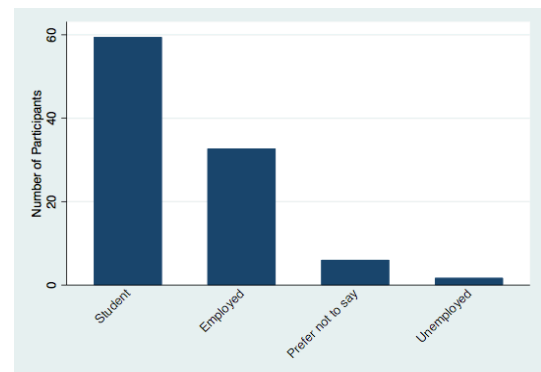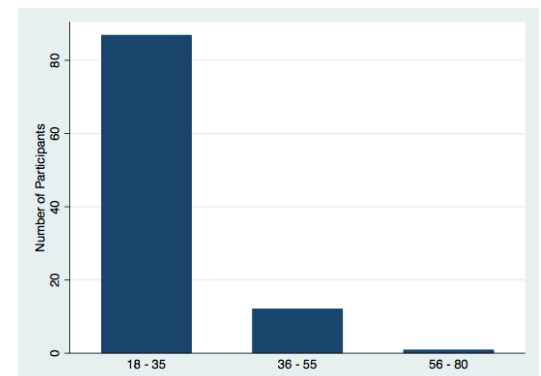

Figure 18 Distribution of treatment condition stratified by age.

Figure 19 Distribution of control condition stratified by age.

Income

Occupation

Age

Appendix 4: Two-sample T-tests

Table 9 Two-sample T-tests in examining mean scores of SRD, SDO, RWA, and PC on gender, sexual, orientation, and having LGBT-friend(s) for treatment or control condition.

Sexual Orientation	Treatment Condition				Control Condition			
	Heterosexual	Non-heterosexual	Mean Difference	P - value	Heterosexual	Non-heterosexual	Mean Difference	P - Value
SRD	M=1.93, SD =0.77	M=1.49, SD =0.58	0.44	$p < 0.05$	M=2.02, SD = 0.73	M=1.39, SD =0.41	0.63	$p < 0.01$
SDO	M=1.70, SD =0.80	M=1.65, SD =0.67	0.05	$p > 0.05$	M=1.83, SD = 0.90	M=1.57, SD =0.63	0.27	$p > 0.1$
RWA	M=1.82, SD = 0.75	M=1.64, SD =0.65	0.18	$p > 0.05$	M=1.88, SD = 0.64	M= 1.49 , SD =0.56	0.37	$p < 0.01$
PC	M= 3.63, SD = 1.43	M= 2.78, SD = 1.50	0.85	$p < 0.05$	M=3.13, SD = 1.4	M= 2.46, SD =1.59	0.67	$p < 0.05$
Gender	Male	Female	Mean Difference	P - value	Male	Female	Mean Difference	P - value
SRD	M= 1.91, SD = 0.81.	M= 1.51, SD =0.55.	0.40	$p < 0.01$	M=1.96, SD = 0.79	M=1.61, SD =0.51	0.34	$p < 0.01$
SDO	M= 1.92 , SD = 0.83	M= 1.41, SD =0.53.	0.51	$p < 0.01$	M=1.96, SD = 0.92	M=1.50, SD =0.60	0.46	$p < 0.01$
RWA	M= 1.85, SD = 0.82	M= 1.60, SD =0.54.	0.25	$p < 0.1$	M=1.82, SD = 0.67	M= 1.59 , SD =0.54	0.23	$p < 0.1$
PC	M= 3.48, SD = 1.50.	M= 3.00, SD = 1.46	0.48	$p < 0.1$	M=3.14, SD = 1.50	M= 2.62, SD =1.42	0.51	$p < 0.1$
LGBT Friendship Status	Do Not Have LGBT Friend(s)	Have LGBT Friend	Mean Difference	P - value	Do Not Have LGBT Friend(s)	Have LGBT Friend(s)	Mean Difference	P - value
SRD	M=2.37, SD= 1.00	M=1.53, SD=0.54	0.83	$p < 0.01$	M= 2.36, SD= 0.84	M= 1.64, SD= 0.56	0.71	$p < 0.01$
SDO	M=2.04, SD=0.89.	M=1.56, SD=0.67.	0.48	$p < 0.01$	M=2.19, SD=0.94.	M=1.60, SD=0.71.	0.59	$p < 0.01$
RWA	M=2.16, SD= 0.94.	M= 1.60, SD=0.60.	0.56	$p < 0.01$	M=2.07, SD= 0.72	M= 1.63, SD= 0.57	0.44	$p < 0.01$
PC	M=3.70, SD=1.22.	M=3.07, SD= 1.53.	0.63	$p < 0.1$	M=2.77, SD=1.31.	M=2.80, SD=1.54	-0.03	$p > 0.1$

Appendix 5: One-way ANOVA analysis for continent

Table 10 Overview of Levene's test and one-way ANOVA on the influence of control variable continent within treatment- and control condition for measures SRD, SDO, and RWA.

Continent	Variable	Treatment				Control			
		F-value	DF	P-value	P(CHI^2)	F-value	DF	P-value	P(CHI^2)
Levene's test	SRD	1.73	(5, 105)	0.13	-	1.18	(4,111)	0.32	-
	SDO	2.49	(5, 105)	0.04	-	2.38	(4,111)	0.06	-
	RWA	0.65	(5, 105)	0.65	-	2.44	(4,111)	0.41	-
One-way ANOVA	SRD	7.14	(5, 105)	0.00	0.38	7.00	(4,111)	0.03	0.27
	SDO	3.31	(5, 105)	0.00	0.39	1.82	(4,111)	0.13	0.17
	RWA	4.5	(5, 105)	0.00	0.46	5.77	(4,111)	0.00	0.45

One-way ANOVA was performed in order to explore the mean differences of different measurements under the conditions of control variables. Firstly, the measurements of SRD, SDO, RWA differences based on continent (treatment condition): Africa (N = 1), Asia (N = 8), European Union (N = 60), North America (N = 36), Oceania (N = 4), and South America (N = 2) were explored for both control and treatment conditions respectively (table 8). Levene's test was conducted and showed an insignificant result for measures SRD and RWA – indicating evidence of homogeneity of variances. However, Levene's test yields no evidence of homogeneity of variances on SDO in terms of continent. SRD and RWA are associated with continent. One-way ANOVA was thus performed on SRD and RWA resulting in significant evidence of the existence in mean differences between subgroups of continent for treatment condition and control condition. As for SDO, one-way ANOVA revealed a significant evidence of the existence in mean differences between subgroups of continent for treatment condition, nonetheless based on a significant Levene's test – this result should be interpreted with scrutiny. No post-hoc comparison will therefore be performed on SDO. However, in the control conditions, no significant mean differences were detected within variable continent. Post-hoc comparison via Tukey's tests were conducted in order to analyse the origin of the mean differences (table 9).

Table 11 Post-hoc comparison via Tukey's test analysing mean differences based on SRD, SDO, and RWA stratified by continent for treatment and control conditions.

Continent	Treatment Condition			Continent	Control Condition		
	SRD M (SD)	SDO M (SD)	RWA M (SD)		SRD M (SD)	SDO M (SD)	RWA M (SD)
South-America	4.16 (0.45)	3.31 (0.44)	3.81 (0.46)	South-America	2.08 (0.82)	1.98 (0.79)	1.96 (0.82)
Oceania	2.16 (0.32) [A]	1.98 (1.14)	1.83 (0.33) [A]	Oceania	2.10 (0.63)	1.73 (0.78)	2.13 (0.76)
Asia	1.78 (0.22) [A]	1.68 (0.54)	1.73 (0.23) [A]	Asia	1.41 (0.04)	1.69 (0.62)	1.69 (0.80)
Africa	1.75 (0.63) [A]	1.31 (0.00)	1.19 (0.65) [A]	Africa	-	-	-
EU	1.66 (0.08) [A]	1.70 (0.73)	1.67 (0.08) [A]	EU	1.89 (0.72)	1.87 (0.89)	1.83 (0.67)
North-America	1.52 (0.11) [A]	1.42 (0.61)	1.62 (0.11) [A]	North-America	1.60 (0.60)	1.47 (0.59)	1.49 (0.47)

Note: Margins sharing a letter in the group label are not significantly different at the 5% level.

Appendix 6: One-way ANOVA analysis for religion

Table 12 Overview of Levene's test and one-way ANOVA on the influence of control variable religion within treatment- and control condition for measures SRD, SDO, and RWA.

Religion	Variable	Treatment				Control			
		F-value	DF	P-value	P(CHI^2)	F-value	DF	P-value	P(CHI^2)
Levene's test	SRD	7.27	(4, 103)	0.00	-	1.22	(7,105)	0.30	-
	SDO	5.40	(4, 103)	0.00	-	1.22	(7,105)	0.30	-
	RWA	7.46	(4, 103)	0.00	-	1.04	(7,105)	0.41	-
One-way ANOVA	SRD	One-Way ANOVA was not performed due to evidence of homogeneity of variances.				2.30	(7,105)	0.03	0.27
	SDO					0.99	(7,105)	0.44	0.72
	RWA					5.77	(7,105)	0.00	0.45

For religion, the option 'Others' (N=6) is undefined and were dropped from the sample. The remaining subjects to be analysed on religion of the control condition were: Atheist (N = 64), Agnostic (N = 12), Buddhist (N = 3), Catholic (N = 23), Christian (N = 23), Hinduism (N = 1), Islam (N = 3), and Judaism (N = 1) were analysed via ANOVA. Levene's test results confirmed the homogeneity of variances of SRD and RWA mean values between the different religious groups for SRD, SDO, and RWA (*table 10*). For the control condition evidence on homogeneity of variance was detected for all three measures. Thus, a one-way ANOVA was performed in order to assess within control condition influence of religion. As can be seen in the table only, measures SRD and RWA were seen to be significantly influenced by religion whereas religion did not influence SDO. One-way ANOVA was not performed for SRD, SDO, and RWA in the treatment condition due to Levene's test indicating there were was homogeneity of variance within different religious subgroups.

Table 13 Post-hoc comparisons via Tukey's test analysing mean differences based on SRD, SDO, and RWA stratified by religion for treatment and control conditions.

Religion	Treatment Condition SRD M (SD)	SDO M (SD)	RWA M (SD)	Religion	Control Condition SRD M (SD)	SDO M (SD)	RWA M (SD)
Atheist	1.56(0.56)	1.61(0.69)	1.52(0.52)	Atheist	1.66(0.08)[A]	1.71(0.81)	1.53 (0.17)[A]
Agnostic	1.45(0.33)	1.36(0.29)	1.40(0.28)	Agnostic	1.64(0.19)[A]	2.01(0.93)	1.43 (0.16)[A]
Buddhist	-	-	-	Buddhist	1.69(0.38)[ABC]	1.46(0.59)	1.81(0.31)[ABC]
Catholic	1.58(0.52)	1.68(0.67)	1.85(0.64)	Catholic	2.18(0.27)[ABC]	2.03(1.02)	2.42(0.22)[BC]
Christian	2.18(1.02)	1.87(0.89)	2.56(0.95)	Christian	2.12(0.14)[BC]	1.59(0.66)	2.12(0.11)[BC]
Hinduism	-	-	-	Hinduism	3.00(0.65)[C]	2.94(0.00)	3.06(0.54)[C]
Islam	2.44(1.33)	2.31(1.86)	2.84(1.64)	Islam	1.98(0.38)[ABC]	1.44(0.65)	2.06(0.32)[ABC]
Judaism	-	-	-	Judaism	1.13(0.65)[AB]	1.00(0.00)	1.31(0.55)[AB]

Note: Margins sharing a letter in the group label are not significantly different at the 5% level.

Appendix 7: One-way ANOVA analysis for income

Results of Levene's test and one-way ANOVA:

Monthly income level has an impact on mean value of SDO score in the control condition. 51 units were dropped from the sample as they reported 'prefer not to say', which is undefined income level, the remaining options are: below 1000 euro (N = 46), from 1000 to 2500 euro (N = 24), from 2500 to 4000 euro ((N =10), above 4000 euro (N = 6). Levene's test for income level and SDO in the control condition resulted in F (3, 82) = 1.66, p = 0.18. One-way ANOVA was performed and resulted in: F (3, 82) = 3.57, p = 0.0176, p (chi2) = 0.31.

Table 14 Post-hoc comparison via Tukey's test analysing mean differences based on SDO stratified by income level for control condition.

One-way ANOVA (Income level - SDO) *Control condition*	M (SD)	Std. Error
1000 – 2500 euro	1.49(0.59)[A]	0.15
Below 100 euro	1.64(0.75)[A]	0.11
Above 4000 euro	1.99(0.86)[AB]	0.30
2500 – 4000 euro	2.34(0.95)[B]	0.23

Note: Margins sharing a letter in the group label are not significantly different at the 5% level.

Appendix 8: One-way ANOVA analysis for education

Results of Levene's test and one-way ANOVA:

Education has an impact on the mean scores of RWA in the control condition. 9 units were dropped from this sample as they reported "preferred not to say". The remaining options are: high school (N = 31), MBO (N = 2), HBO (N = 1), bachelor (N = 39), masters (N = 32), PhD (N = 3), no education (N = 1). Levene's test for education and RWA in the control condition resulted in F (6, 102) = 1.88, p = 0.09. One-way ANOVA was performed and resulted in: F (6, 102) = 3.29, p = 0.0053, p (chi^2) = 0.17.

Table 15 Post-hoc comparison via Tukey's test analysing mean differences based on RWA stratified by monthly education level for treatment and control conditions.

One-way ANOVA (Educational level - RWA) *Control condition*	M (SD)	Std. Error
High School	1.52(0.45)[A]	0.10
Bachelor	1.55(0.54)[A]	0.09
Secondary vocational educational/MBO	1.75(0.62)[AB]	0.41
Masters	1.93(0.71)[B]	0.10
PhD	1.96(0.80)[AB]	0.34
University of applied sciences / HBO	2.75(NA)[B]	0.58
I did not finish any education	3.06(NA)[B]	0.58

Note: Margins sharing a letter in the group label are not significantly different at the 5% level.

Appendix 9: Mann-Whitney U tests

Table 16 Mann-Whitney U test on SRD, SDO, RWA, and PC for treatment condition vs. control condition.

Variable	Two Sample Wilcoxon	Rank-sum (Man-Whitney) test			Unadjusted Variance	Adjustment for Ties	Adjusted Variance	Z-score	P-value
		Observation	Rank sum	Expected					
SRD	0	116	14023	13224	244644.00	-597.34	244046.46	1.62	0.02
	1	111	11855	12654					
	Combined	227	25878	25878					
SDO	0	111	13504.50	13224	244644.00	-3377.62	241266.38	0.57	0.57
	1	111	12373.50	12654					
	Combined	227	25878	25878					
RWA	0	116	13495.50	13224	244644.00	-685.94	243958.06	0.55	0.58
	1	111	12382.50	12654					
	Combined	227	25878	25878					
PC	0	116	12280	13221	244644.00	-10644.25	233999.75	1.95	0.05
	1	111	13598	12654					
	Combined	227	25878	25878					

Table 17 Mann-Whitney U test on PC for respondents for treatment condition vs. control condition for various sub-groups.

Variable	Two Sample Wilcoxon	Rank-sum (Man-Whitney) test			Unadjusted Variance	Adjustment for Ties	Adjusted Variance	Z-score	P-value
		Observation	Rank sum	Expected					
Income (1000 – 2500 euro)	0	24	530	636	2968.00	-164.20	2803.80	-2.00	0.0453
	1	28	848	742					
	Combined	52	7626	1378					
Employed	0	38	1218	1406	8201.67	-380.83	7820.84	-2.13	0.03
	1	35	1483	1295					
	Combined	73	2701	2701					
Education (high school)	0	31	751.50	883.50	3681.25	-305.47	3375.78	-2.27	0.02
	1	25	844.50	712.50					
	Combined	56	1596	1596					
Education (Bachelor)	0	39	1364	1638	12012.00	-570.07	11441.93	-2.56	0.01
	1	44	2122	1848					
	Combined	83	3486	3486					
Education (Master)	0	32	1084.50	928	3866.67	-193.36	3673.31	2.58	0.0098
	1	25	568.50	725					
	Combined	57	1653	1653					

Appendix 10: Graphical distributions of treatment and control conditions on means of main variables.

Figure 20 Graphical overview on means of outcomes SRD, SDO, RWA, and PC stratified by sexual orientation (control condition).
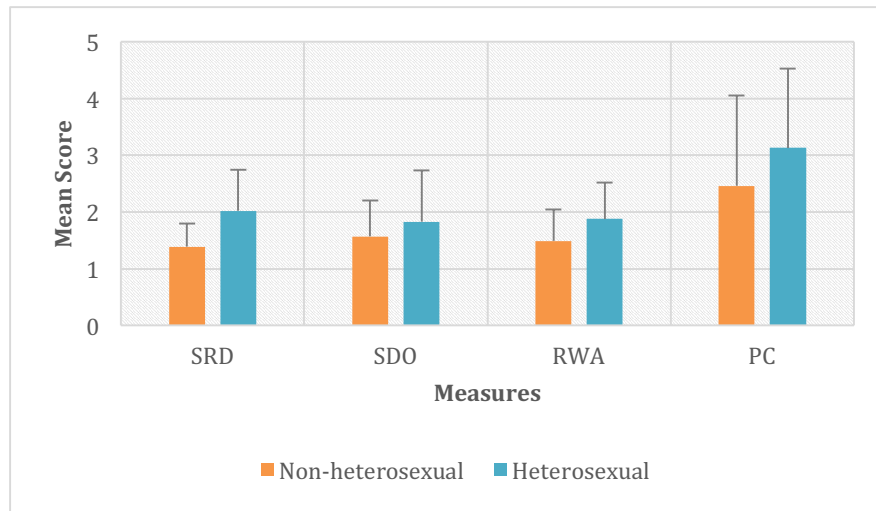

Figure 21 Graphical overview on means of outcomes SRD, SDO, RWA, and PC stratified by sexual orientation (treatment condition).
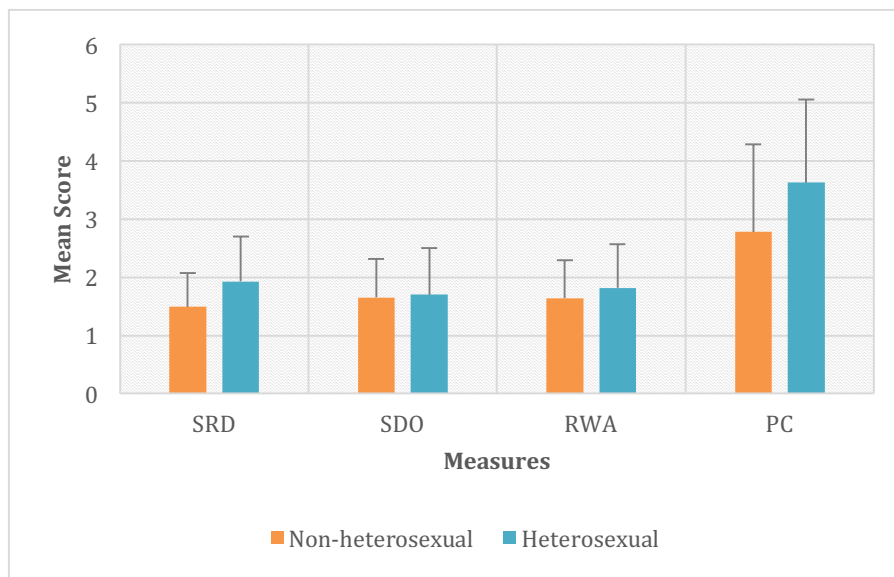
Figure 22 Graphical overview on means of SRD, RWA, and PC stratified by gender (control condition).
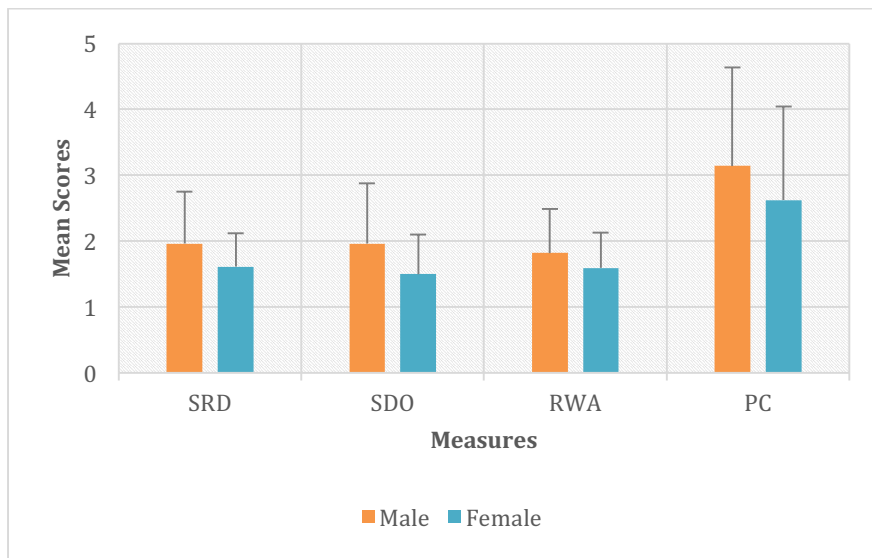

Figure 23 Graphical overview on means of SRD, SDO, RWA, and PC stratified by gender (treatment condition).
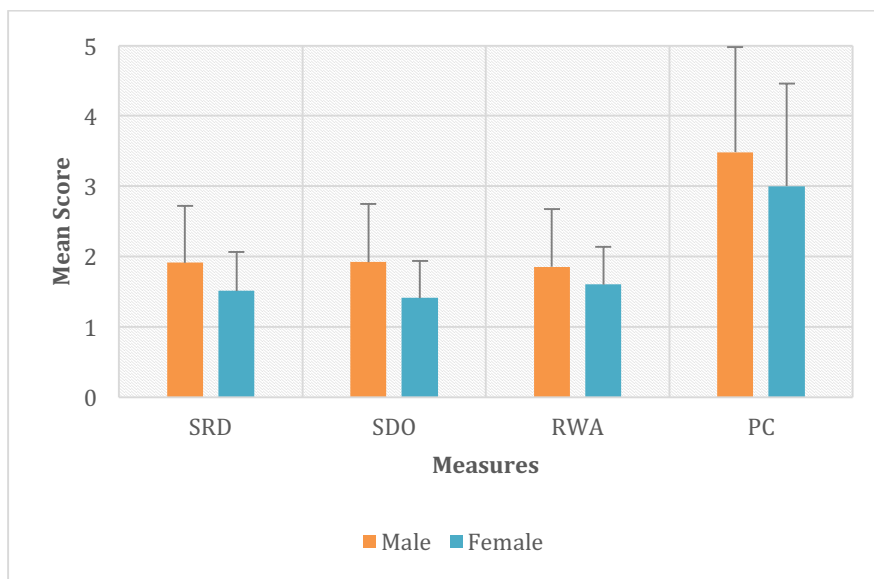
Figure 24 Graphical overview on means of SRD, SDO, RWA, and PC stratified by LGBT friendship status (control condition).
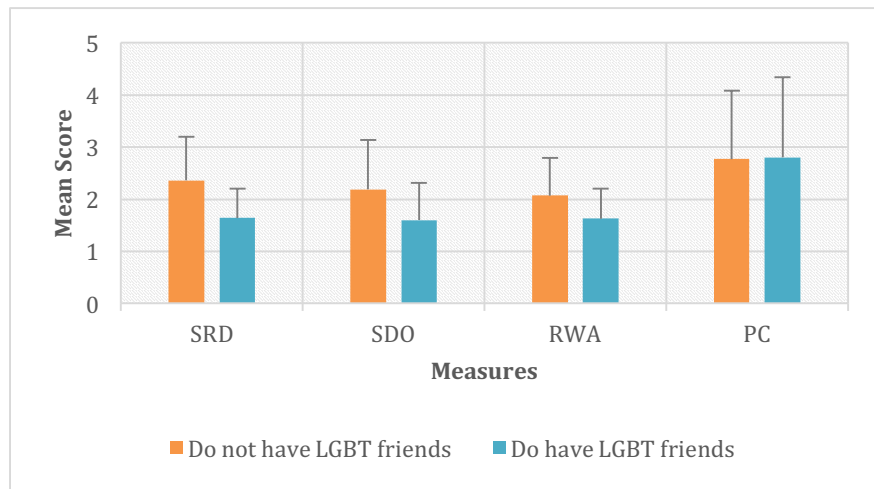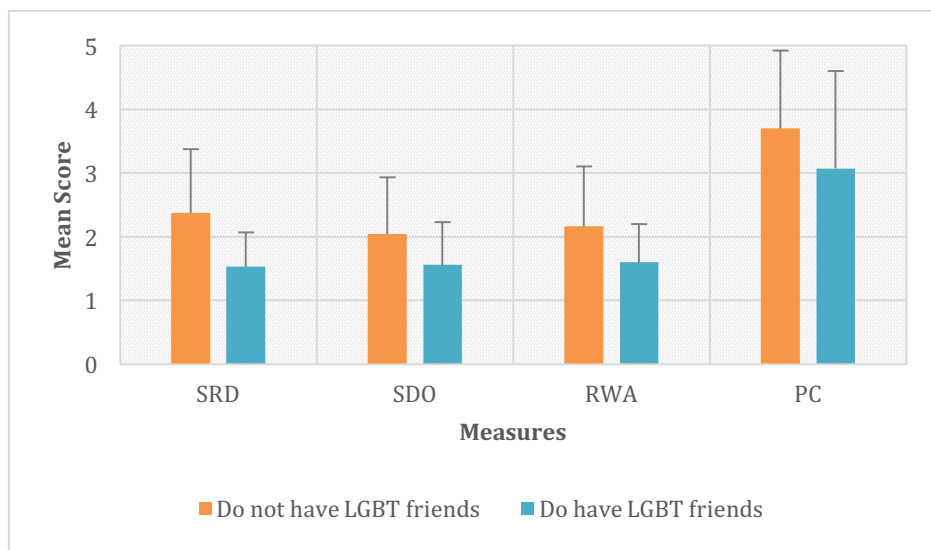

Figure 25 Graphical overview on means of SRD, SDO, RWA, and PC stratified by LGBT friendship status (treatment condition).

Appendix 11: Choice-matching score.

Choice-matching score (Treatment Condition N = 111)

Respondent ID	CM score	Respondent ID	CM score
1	-0.049	139	-0.120
3	-0.023	149	-0.118
5	-0.038	157	-0.123
6	-0.059	163	-0.135
7	-0.055	172	-0.121
10	-0.088	176	-0.121
12	-0.084	181	-0.185
16	-0.094	188	-0.109
17	-0.104	189	-0.140
19	-0.108	190	-0.143
23	-0.104	197	-0.115
27	-0.119	200	-0.143
28	-0.102	201	-0.130
32	-0.140	207	-0.118
33	-0.127	208	-0.137
35	-0.121	212	-0.161
37	-0.115	214	-0.126
38	-0.109	220	-0.153
40	-0.104	221	-0.160
44	-0.105	225	-0.136
46	-0.118	227	-0.145
47	-0.179	270	-0.162
48	-0.113	288	-0.148
53	-0.182	321	-0.124
54	-0.116	328	-0.150
56	-0.116	345	-0.155
60	-0.107	366	-0.159
61	-0.112	375	-0.126
62	-0.178	388	-0.145
63	-0.188	389	-0.143
64	-0.128	409	-0.123
71	-0.174	410	-0.154
74	-0.121	423	-0.166
75	-0.115	183	-0.148
76	-0.148	184	-0.153
79	-0.112	179	-0.154
80	-0.135	24	-0.151
81	-0.193	42	-0.149
82	-0.175	223	-0.181
83	-0.112	43	-0.182
89	-0.113	9	-0.148
90	-0.107	216	-0.198
96	-0.117	347	-0.168
100	-0.097	215	-0.184
101	-0.128	14	-0.186
104	-0.114	50	-0.192
105	-0.125	193	-0.164
106	-0.155	299	-0.170
109	-0.132	312	-0.183
110	-0.111	49	-0.172
111	-0.112	131	-0.164

124	-0.124	344	-0.187
125	-0.116	355	-0.176
128	-0.121	186	-0.179
129	-0.112	133	-0.201
132	-0.115		

Top two winners selected based on highest score and valid e-mail address:

5	**-0.038**	**6**	**-0.059**

Choice-matching score (Control Condition N = 116)

Respondent ID	CM score	Respondent ID	CM score
2	-0.031	136	-0.157
4	-0.042	140	-0.104
8	-0.060	154	-0.133
11	-0.076	156	-0.109
13	-0.088	160	-0.116
15	-0.091	162	-0.125
18	-0.134	166	-0.177
20	-0.109	167	-0.192
21	-0.140	168	-0.130
22	-0.107	169	-0.163
25	-0.105	170	-0.133
26	-0.120	173	-0.138
29	-0.108	175	-0.158
30	-0.122	177	-0.140
31	-0.102	180	-0.147
34	-0.124	182	-0.174
36	-0.142	185	-0.136
39	-0.125	187	-0.131
41	-0.144	191	-0.162
45	-0.178	192	-0.160
51	-0.126	194	-0.132
52	-0.167	195	-0.146
55	-0.170	196	-0.130
57	-0.131	198	-0.123
58	-0.113	199	-0.140
59	-0.142	202	-0.124
66	-0.130	203	-0.155
68	-0.125	204	-0.128
69	-0.127	205	-0.126
70	-0.158	206	-0.132
72	-0.106	209	-0.162
73	-0.128	210	-0.192
77	-0.180	211	-0.138
78	-0.119	213	-0.164
84	-0.126	217	-0.153
85	-0.115	218	-0.156
87	-0.132	219	-0.150
88	-0.109	222	-0.182
91	-0.117	224	-0.146
92	-0.124	226	-0.192
93	-0.141	229	-0.190
94	-0.118	265	-0.181
95	-0.145	281	-0.153
97	-0.143	282	-0.179
98	-0.127	284	-0.158
99	-0.135	287	-0.161
102	-0.125	305	-0.145
103	-0.126	311	-0.168
107	-0.113	314	-0.166
108	-0.127	340	-0.157
112	-0.115	346	-0.191
113	-0.124	354	-0.195
114	-0.125	358	-0.171
117	-0.130	359	-0.198
118	-0.139	367	-0.195
123	-0.119	368	-0.196
126	-0.108	372	-0.168
127	-0.115	391	-0.149