Empirical Evaluations of Verbal Operant and Nudge Arrangements in Ethical Decision Making and Promotion of Social Justice

By

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Abstract

Empirical data can inform evidence-based practices and promote policy change related to diversity, equity, and inclusion (DEI). Self-awareness of identities and biases, which can involve tacts of own behavior, is a core competence to promote ethical and culturally sensitive practices. Choice architecture studies show that decisions depend on the way the choice is presented. We can examine choice arrangements empirically by controlling the presentation of verbal stimuli and defaults in a choice task. Participants were university students in behavioral science courses and we evaluated the effects of nudge arrangements (i.e., antecedent stimuli in the form of checked/unchecked box, positive and negative frames, and decoy) in a survey that offered options to receive information about DEI. Studies 1 and 2 examined the effects of nudge arrangements on prosocial choice (i.e., opt into receiving information about DEI resources) in 60 and 56 students, respectively. To examine potential covert behavior related to decision making, we also measured the latency to make a choice, recall of choice, and social validity of the choice presentation. From a total of 120 choice opportunities, there were 60 instances of prosocial behavior in Study 1. For Study 2, 42.9% of participants chose to receive information about DEI. For both studies, we can interpret that nudge arrangements, as independent variables, may not have served as salient discriminative stimuli to evoke prosocial choice. A potentially relevant variable that could explain most of the participants' behavior was the presence of abolishing operations to learn about DEI, which could be explained by negative reinforcement of avoiding information overload.

Keywords: Choice architecture, consent, ethics, nudge, self-awareness, verbal behavior, DEI.

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Positionality Statement: Fernanda Oda's (she/her) identities include woman, queer, Brazilian, Japanese, Latina, Asian, able-bodied, international graduate student in the U.S., and native Portuguese speaker. She is currently a doctoral student, earned her master's degree in behavior analysis, is a Board Certified Behavior Analyst (BCBA), and has experience with conceptual and verbal behavior research and projects related to diversity, equity, and inclusion in the academic setting, in Brazil and in the U.S. Through her personal and academic journey, Fernanda has

experienced marginalization and otherness. Consequently, she acknowledges that her research interests are motivated by her history of learning as a woman of color and international student.

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Introduction

Social justice entails ensuring that all individuals are afforded basic human rights regardless of status, abilities, or identities (United Nations, 1948). Individuals with statuses, abilities, or identities that are part of historically marginalized groups may not have equal opportunities to access basic human rights (Pritchett et al., 2021). By learning about the cultural identities and histories of those they serve, behavior analysts can develop practices that can lead to culturally sensitive interventions that can help promote social justice to all individuals (Mathur & Rodriguez, 2022; Miller et al., 2019). This could be in the form of more clearly articulating understanding the language and meaning of what is being communicated, as well as helping individuals feel more comfortable with interventions designed to help them achieve their goals.

As Pritchett and colleagues (2021) stated, part of the work of behavior analysts is to understand how social problems happen and how to produce positive changes. Behavior analysts have been discussing social issues and the promotion of social justice (e.g., Christens et al., 2019; Moore, 2003; Pritchett et al., 2021; Watson-Thompson et al., 2022; Wolf, 1978) and diversity, equity, and inclusion (DEI) efforts. Much of this discussion focuses on theoretical contributions and practice recommendations (e.g., Capriotti & Donaldson, 2022; Conine et al., 2022; Deochand & Costello, 2022; Fong & Tanaka, 2013, Fong et al., 2016; Leland & Stockwell, 2019; Martinez & Mahoney, 2022; Mathur & Rodriguez, 2022; Morris et al., 2021; Pavlacic et al., 2022; Petronelli & Ferguson, 2022; Pritchett et al., 2021; Schroeder-MacKay et al., 2021).

Self-awareness of identities and biases and *awareness* of inequities and social issues are core competencies to promote culturally sensitive practices (Fong & Tanaka, 2013; Mathur & Rodriguez, 2022). Self-descriptive verbal behavior can be defined as describing one's own

behavior. From a behavior-analytic perspective, self-awareness and self-descriptive verbal behavior (i.e., self-tacts) can have the function of a tact. Skinner (1957) defined a tact as a verbal operant in which a response of a given form is evoked by a *current* object or event (p. 82), and self-tacts as verbal behavior controlled by other current behavior of the speaker (p. 139). When someone labels their identities (e.g., "I'm a person of color"), their behavior can be multiply controlled, and can be under control of antecedent environmental variables (e.g., current nonverbal aspects related to "ethnicity"), and reinforced by a verbal community that asks and learns about their culture. Skinner (1957) explained that only through the acquisition of self-descriptive verbal behavior does the speaker become "aware" of what they are doing or saying, or why (p. 139). While self-tacts describe one's own behavior, self-awareness can be interpreted as tacts that describe the conditions under which a behavior occurs. From a behavior-analytic perspective, self-awareness can relate to the concept of *consciousness* and can be interpreted as an individual's verbal responses with respect to their own behavior as the source of discriminative stimuli that is reinforced by a verbal community (Schlinger, 2008; Skinner, 1945). In other words, becoming self-aware or "being conscious" is reacting to own behavior verbally, which is a social product taught by others.

A search in January 2024 using PsycInfo database showed no results of empirical studies on self-awareness and social or prosocial behavior in behavior-analytic journals (search input: "behavior analysis", field *anywhere*; AND "self-awareness"/"consciousness", fields *document title* and *abstract*; AND "social"/"prosocial" fields *document title* and *abstract*; peer-reviewed). A broader search without limiting it to the behavior-analytic literature resulted in 21 peer-reviewed empirical studies with humans examining social-awareness and prosocial behavior. Self-awareness can increase prosocial behavior (e.g., Batson et al., 1999; Berkowitz, 1987;

Lewis et al., 2021). Methods to examine self-awareness as an independent variable in empirical studies include reminding individuals of their own moral principles, promoting self-focused attention of one's own standards, and presenting a mirror to increase self-awareness (e.g., Batson et al., 1999; Lewis et al., 2021). For example, Lewis et al. (2021) systematically replicated procedures of research on self-awareness and social behavior in two groups. They analyzed data from 36 college students who attended in-person individual sessions. Participants were instructed to engage in materials and work cooperatively with another person, and they were randomly assigned to the control or experimental group. Self-awareness was enhanced in the experimental group by the presence of a mirror during the task, which was associated with higher rates of prosocial behavior for the participants assigned in that group.

As Deochand and Costello (2022) noted, a social justice approach to ensure that all individuals are treated with dignity and respect focuses on integrating an advocacy framework to lobby for change. The first step in building a social justice framework is providing adequate operational definitions from which to build. Choosing to engage in prosocial behavior can be operationally defined. From a behavior-analytic perspective, choice implies the availability of alternatives (Catania, 1975, 1980), distribution of operant behavior among reinforcing alternatives (Pierce & Cheney, 2008), or allocation of time between two or more response options (Fisher & Mazur, 1997). In these theoretical and empirical accounts of choice, behavior analysis views choice as a product of reinforcement history and environmental variables, including schedules of reinforcement, effort, and value of outcome (Pierce & Cheney, 2008).

Choice Architecture

Contexts that evoke decision making and choice can involve the promotion of social justice (e.g., Mrkva et al., 2021). A person can decide to learn more about how to use gender-

neutral language, cultures, or act by advocating for a social cause. Empirical research and applications to promote social behavior (Hursh & Roma, 2013) and to inform policy change (Reed et al., 2022; Roma et al., 2017) demonstrates the potential of behavioral economics approach to understanding behavior and choice. Behavioral economics describes ways to examine decision making and behavior to promote desirable outcomes (Reed et al., 2013). Choice is typically the main dependent variable in behavioral economic studies (Tagliabue, 2023). In recent years, researchers have proposed expanding behavior analysis through the application of behavioral economics concepts and methods to understand choice, design effective schedules of reinforcement when providing reinforcers to clients, and improve service delivery (e.g., Hursh, 1980, 1984; Odum, 2011; Reed et al., 2013).

Choice architecture, a term coined by Thaler and Sunstein (2008), describes ways to present a choice to a decision maker. Choice architecture studies show that decisions depend upon *the way* the choice is presented (Johnson et al., 2012) and can include a *nudge* (Thaler & Sunstein, 2008). Nudges are elements in choice architecture that can produce predictable behavioral change without forbidding options or significantly altering economic incentives (Thaler & Sunstein, 2008). From a behavior-analytic perspective, nudges can be interpreted as subtle antecedent manipulations of certain stimuli (e.g., number of choices, verbal framing, defaults) that exert stimulus control and motivating operation control on choosing (Oda et al., 2023). In other words, nudging denotes a type of contingency management that focuses on arranging antecedents of choice behavior (da Rocha & Hunziker, 2020; Tagliabue, 2023). While not extensively examined in the behavior-analytic literature, choice architecture can advance the understanding of decision making and choice by structuring contingencies for individuals to promote desired outcomes in an effective way (Foxall, 2003; Reed et al., 2012). It can be

beneficial to understand whether or how someone will behave prosocially, as well as identifying the factors that influence their decisions. By analyzing the context of the choice – including the *way* it is presented – and the presence of prosocial behavior, we can have more information on how to arrange an environment to promote more desirable prosocial responses.

Verbal Behavior

Some instruments used in behavioral-economic studies include the presentation of verbal stimuli in the form of tasks and vignettes that can evoke choice. In choice architecture studies, the experimenter manipulates verbal and nonverbal stimuli, and evaluates the effectiveness of a nudge toward a socially desirable behavior. In a choice task, the experimenter can include verbal stimuli that can have the form or function of a tact and/or autoclitic. As Skinner (1957) described, no verbal response can be said to be a verbal operant from its form alone. To identify the type of verbal operant, we need to undestand the variables of which the response is a function (DeSouza et al., 2017; Sautter & LeBlanc, 2006). The function is usually inferred based on certain formal properties (Skinner, 1957), but ultimately determined empirically. As previously mentioned, a tact is controlled by a nonverbal stimulus.

An autoclitic is verbal behavior that is based upon or depends upon one's other verbal behavior (Skinner, 1957). It describes, qualifies, or comments upon verbal behavior and can alter its effect upon the listener (Skinner, 1957, p. 332). For instance, in the statement "Do NOT make an unfair choice", "NOT" can have an autoclitic function acting upon the speaker, which could have the function of a mand for the listener's behavior. Empirical research on autoclitics is scarce (Sautter & LeBlanc, 2006), and includes studies to teach autoclitic repertoires in preschool children (Howard & Rice, 1988), examine verbal repertoire during play time in children (Lodhi & Greer, 1989), verbal skills with adolescents with autism (Williams & Greer,

1993), and evaluation of effects of positive and negative autoclitics in undergraduate students (Oda et al., 2023).

Choice Architecture, Verbal Behavior, and Ethics

Opt-In and Opt-Out Arrangements: "Expressed" and "Presumed" Consent

An example of choice architecture is the investigation of the effects of opt-in and opt-out arrangements and the inclusion of defaults. In an *opt-in arrangement*, also known as "expressed consent", individuals are not included or subscribed to an agreement by default (Etheredge, 2021). Instead, they need to act (e.g., check a box) to provide more explicit consent to participate or receive a service. In an *opt-out arrangement*, also known as "presumed consent", individuals are included or subscribed to an agreement by default. They are included unless they act to decline the service (e.g., uncheck a box). *Frames* refer to formal aspects of verbal stimuli in the form of text, including sentences that describe a choice option (e.g., "I want to receive notifications", positive frame; "I DO NOT want to receive notifications", negative frame). Johnson et al. (2002) and Oda et al. (2023) examined the effects of four framing groups in an online marketing survey and academic preferences questionnaire, respectively. In these studies, participants had options to enroll or not into receiving more information about health services or additional academic resources. Participants were randomly assigned to one of four groups: (a) option to enroll with unchecked box (i.e., no default), (b) option to not enroll with unchecked box (no default), (c) option to enroll with checked box (default), and (d) option to not enroll with checked box (default). These studies revealed that the negative frame with no default (Group 2) produced higher rates of participation (i.e., enrolling into receiving information about health services or academic resources) compared to the other framing and default options. Oda et al. (2023) interpreted Groups 2 and 4 as having a negative autoclitic, given that the addition of a

negative statement modifies a verbal response and can increase its effectiveness. In addition, the authors hypothesized that defaults (e.g., box checked) could have an autoclitic function as well. An opt-in arrangement with a checked box ("☑ I want to…"), for example, can function as a stronger and more explicit mand upon the listener to behave than an option with an unchecked box ("☐ I want to…").

A search in October 2023 using PsycInfo database showed 43 results of peer-reviewed empirical studies on opt-in/out arrangements and social or prosocial behavior (search input: "opt in"/"opt-out", fields *document title* and *abstract*; AND "social"/"prosocial" fields *document title* and *abstract*; peer-reviewed). Some studies focused on a hypothetical choice. For example, Liu et al. (2022) examined willingness to vaccinate in 1926 respondents in an online survey and showed that opt-out arrangement increased report of willingness to be vaccinated. Abhyankar et al. (2014) evaluated hypothetical choice in 124 healthy women who were presented into taking part of a treatment trial (e.g., Abhyankar et al., 2014). Opt-in and -out arrangements discouraged participants from choosing to participate in the trial compared to other choice arrangements with more explicit option description. An example of real choice study was conducted by Zarghamee et al. (2017) which evaluated nudge arrangements in 328 students that were presented with the opportunity to donate to real charities. In their study, opt-out arrangements increased donations compared to opt-in arrangements.

Decoy Effect

Another type of nudge is the introduction of a *decoy effect* (Huber et al., 1982; Wedell & Pettibone, 1996; Slaughter et al., 1999; Zhang & Zhang, 2007), which involves adding an intermediate option to an original two-option choice that influences responding towards a high-cost option (i.e., either towards the intermediate or to the costliest option). Most research on the

decoy effect is related to consumer behavior and decision-making studies (e.g., Ert & Lejarraga, 2018), and can be interpreted as a nudge (e.g., Pennington et al., 2022; van den Enden & Geyskens, 2021). In the presence of a decoy, decision making often leans less towards selecting the option that aligns best with our objectives or needs, and more towards choosing what is perceived as the most advantageous option. From a behavior-analytic perspective, a decoy can be defined as a stimulus, added to at least other two stimuli of relative asymmetrical value, that alters the motivating operation (Lechago, 2019; Michael, 1993; Miguel, 2013) to choose or consume a reinforcer. This can happen because the new stimulus evokes rules related to relative cost-benefit of consumption and comparison between monetary value of each option, altering the reinforcing value of stimuli present. For instance, if an individual whose behavior is controlled by an establishing operation of low magnitude (i.e., slightly thirst) to consume soda has options to buy a $3 small-size soda or a $7 large-size soda, by adding a decoy of $6.50 medium-size soda, their behavior can lean more towards buying the large-size option instead of the small-size soda.

Decoys in marketing and commodity consumption produce robust biases on consumer's behavior (Zhang & Zhang, 2007). Although the decoy effect has been investigated by manipulating monetary price (e.g., Devetag, 1999) and effort (e.g., Huber et al., 1982) to obtain in alcohol purchase (Pennington et al,, 2022) and healthy or sustainable food (Attwood et al., 2020; van den Enden & Geyskens, 2021), no studies investigating decoy effects as nudges related directly to the promotion of DEI and advocacy efforts. Advocacy can involve various levels of engagement, including increasing knowledge of a social issue, or increasing knowledge *and* acting upon the issue to promote social change (Emmelhainz et al., 2021; Pickover et al., 2020). Higher levels of engagement (e.g., knowledge and action) are subject to the law of least

effort (see Brener & Mitchell, 1989; Pinkston, 2021), which predicts that humans will act in ways that minimize the effort of behaving. Instead of varying the *monetary* cost to obtain a product, we could vary the response *effort* of the described behavior. A decoy option could increase responding toward prosocial behaviors. If a person is presented with the option to volunteer (prosocial behavior) or not (no prosocial behavior) to a social cause, they may choose to not engage in prosocial behavior. However, if we introduce a decoy (i.e., an intermediate option that describes a lower effort prosocial behavior), they may then choose to engage in a prosocial behavior.

Ethical Implications of Choice Architecture

Nudge manipulations can raise ethical concerns related to the right to make an informed choice (Kuyer & Gordijn, 2023; Schmidt & Engelen, 2020) and to give explicit consent. One of the most discussed ethical concerns is that nudges violate autonomy (Kuyer & Gordijn, 2023). Autonomy means having access to relevant alternatives without being forced to make any particular choice (Schmidt & Engelen, 2020). Although Thaler and Sustain (2008) describe that nudges respect freedom to choose between alternatives (i.e., the alternatives are still present, and the individual can still choose), it is possible to argue that subtle changes in the way choice is presented – especially when the nudger is in a position of power – can interfere on individual autonomy (Pettit, 1996).

Ethical issues related to decision making and nudging are concerns related to the ethical conduct of behavior analysts. The *Ethics Code for Behavior Analysts* (Behavior Analyst Certification Board, BACB, 2020) prescribes compassion, dignity, and respect as core principles for the profession. This includes respecting and promoting clients' self-determination and acknowledging the importance of personal choice (BACB, 2020). Research on verbal behavior

and decision making must focus on aspects of social validity of procedures used to ensure that participants feel respected in terms of their choice, including the evaluation of *the way* the choice is presented.

Social Validity of Procedures and Self-Report

A social justice approach requires behavior analysts to investigate the social acceptability of their services (Deochand & Costello, 2022). A legitimate and socially valid measure of how an individual feels about making a decision is self-report. Wolf (1978) described that the assessment of social appropriateness of means and procedures used in behavior-analytic interventions – sometimes viewed as "subjective" (e.g., verbal behavior about behavior) – are as important as other "objective" measurement systems (e.g., direct observation of behavior). Although self-report methods are criticized and considered a more subjective measure compared to direct observation of the target behavior, they are still highly regarded because they offer valuable information in situations where no other data sources are accessible, and certain matters are considered too crucial to be overlooked (Critchfield et al., 1998).

For the sake of precision, we must make an important distinction about self-report methods. Critchfield and colleagues (1998) made contributions to the conceptual analysis of self-report by defining its potential functions in research, including (a) gathering additional information of experimental and extra-experimental variables that can influence participant' responding, and (b) analyzing verbal behavior as a primary subject matter. To extend their analysis, self-report is, in essence, verbal behavior. As with any other type of operant behavior, we can analyze self-reports and study their controlling variables. For instance, self-reports can be tacts of own feelings and other behaviors emitted by the participant. Skinner (1974) argued that radical behaviorism does not deny the possibility or usefulness of self-observation, but it

questions the nature of what is felt or observed, and the reliability of the observation. Thus, procedures to collect and analyze self-report data must be carefully designed to ensure that they are accurate and effective tacts about the relevant controlling variables manipulated by the experimenter. Self-reports can be especially valuable as measures of social validity of research procedures. Although could be other ways to infer information about social validity of procedures used in research, what the participant has to say about research practices has critical importance.

An important conceptual distinction is the difference between *feeling* and *reporting what one feels* (Skinner, 1974). While we might perceive feelings as immediate reactions to stimuli, the act of reporting them is a result of verbal and cultural contingencies arranged by a specific verbal community. Similarly, a distinction can be drawn between *behaving* and *reporting own behavior* and its causes, or between *choosing* and *reporting a choice* and its rationale. In behavioral economics and behavior-analytic studies of choice and preference, reporting a choice can have unique value to the participant and to the researcher. In the individual level, the participant practices self-awareness when describing their behavior and potential causes. Researchers can have additional information about potential controlling variables of the subject matter, and could be in a better position to understand, predict, and control behavior. Self-report can be clues to past and present behavior and its controlling variables, and clues to conditions related to future behavior (Skinner, 1974).

To date, and to our knowledge, there are no behavioral economics studies that collected data using behavior-analytic methods on informed choice and/or on social validity of consumers' perspectives of nudge arrangement or the context of their choice. Tacting a previous choice correctly – influenced or not by a nudge – can be evidence that a choice made was "rational", or

under control of the relevant variables. Behavior analysts have empirically studied recalling past events in the context of teaching individuals with autism new verbal repertoires (e.g., Keesey-Phelan et al., 2022; Shillingsburg et al., 2017). Recalling past behavior can be interpreted as tacts if the response is controlled by an antecedent nonverbal stimulus. According to Skinner (1957), the response of recalling must be understood as a response to *current* stimuli, including events within the speaker themselves (e.g., intraverbal responses emitted by the speaker, "What did I choose previously?"), combined with a previous history of conditioning to recall events. In other words, current behavior is controlled by current variables (Palmer, 1991); current behavior of recalling is controlled by verbal stimuli present in the context that evokes recalling, and not by a past stimuli. In addition to analyzing the accuracy of the tact that describes previous choice, it is possible to evaluate the *response strength* (Palmer, 2009, 2021; Skinner, 1957) of recalling. As a construct, response strength describes a family of behavioral effects – such as latency of responding– that can help us interpret complex behavior (Palmer, 2021). Recalling a choice accurately and fast (i.e., short latency of recall) could indicate that the behavior of choosing was under control of the relevant variables. Another social validity measure of procedures could be verbal behavior emitted by participants in relation to the procedures or context of choice. For instance, after the experiment with a nudge arrangement, the experimenter could ask respondents to tact how they felt when they were asked to decide.

Covert or private events (Skinner, 1945, 1974) are responses that are only accessible to the person emitting the behavior. Decision making can take the form of private or public events. Decision making and problem solving have been studied conceptually and empirically by behavior analysts (e.g., Axe et al., 2018; Donahoe & Palmer, 2004; Fantino, 1998; Keesey-Phelan et al., 2022; Suarez et al., 2022). Potential covert decision making when one contacts a

nudge can be measured by collecting data on the latency of submitting an answer given a survey question. This cannot be directly observed by the experimenter when someone is answering a survey in their homes, but can be observed after the experiment is over if the survey platform can provide time-based measures taken to submit answers. Also, we can interpret the latency of a behavior as related to the response effort of a covert verbal response. Oda et al. (2023) hypothesized that the presence of negative autoclitics can evoke higher response effort than positive autoclitics. In other words, a negative statement can require "more thinking" to decide than a statement framed in a positive way. Latency data of the decision-making process, combined with social validity and self-report data of rationale for making a decision, can provide additional information of covert verbal episodes that can occur when making a choice.

Specific Aims

Researchers can empirically study the antecedent manipulations described above, which involve arranging verbal stimuli and nudges. Thus, the goal of these studies was to examine the effects of verbal behavior, self-tacts about identities, and choice architecture in the form of opt-in/opt-out, defaults, and decoy arrangements in a survey on academic preferences in undergraduate students. We also measured latency to make a choice and social validity of procedures.

Results of this project could contribute to the understanding of decision making, thinking, covert verbal behavior, effect of verbal operants, and complex social phenomena related to ethics of informed choice and consent, and social validity of procedures.

Aim 1 (Study 1): To evaluate effects of verbal frames, self-tacts of identities, and defaults in the form of checked and unchecked box on prosocial choice using within-subject and between-group designs. Based on Oda et al. (2023), we hypothesized higher prosocial choice in the presence of

negative verbal frames than in the presence of positive frames. In addition, we hypothesized higher prosocial choice in the presence of self-tact of identities condition compared to the group not exposed to the self-tact condition using a between-group design. We collected data on latency of responding, choice recall, and social validity of procedures in choice arrangements to evaluate sense of autonomy.

Aim 2 (Study 2): To evaluate the decoy effect on prosocial choice using a within-subject design. Based on the decoy literature, we hypothesized that the presence of a decoy option would increase prosocial choice compared to the no decoy condition. We collected data on choice recall, and social validity of procedures in choice arrangements to evaluate sense of autonomy.

Method

We conducted two independent studies to evaluate the effects of (a) self-tacts of identities in opt-in/opt-out arrangements, and (b) decoy in prosocial choice.

Participants

We recruited students enrolled in courses at a department of behavioral science at a Midwestern university via email and Canvas announcements. For Study 1, which had a mixed design (see detailed description in the section below), the minimum number of participants we planned to recruit was 56. We used a power analysis using G*Power (available at https://www.psychologie.hhu.de) to calculate this projected sample size (input parameters for ANOVA within-between interactions: α err prob = 0.05; power (1 - ß err prob) = 0.95; number of measurements = 2; Output parameters: noncentrality parameter δ = 13.5, critical F = 4.02, numerator df = 1, denominator df = 52, total sample size = 54, actual power = 0.95). The power analysis resulted in a sample size of 54. However, to maintain equal size of participants in each

of the four group for Study 1, the minimum number of participants was 56 (i.e., 14 participants in each group). Recruitment started on March 29th, 2024, and ended on April 7th, 2024.

For Study 2, we targeted a sample size of 10 students. For Studies 1 and 2, participants received extra credit as compensation. All procedures were approved by the university's Institutional Review Board. Appendix A illustrates the informed consent.

Setting and Materials

Students completed all study activities online using a commercially available survey platform (i.e., Qualtrics, Provo, UT). Replicating procedures from Oda et al. (2023), we informed students that completion of the survey was optional (i.e., students would not be compensated nor penalized for participation/lack thereof). Instructors posted an announcement on their online course platform (i.e., Canvas) to all students prior to distributing the survey. The announcement stated that the purpose of the survey was to learn more about students' preferences. The survey indicated information about risks and benefits and informed that responses would be used for educational/academic purposes only.

Experimental Design

Figure 1 depicts the experimental design used for both studies. For Study 1, we used a between-subject and within subject design (i.e., mixed-design) to study choice towards a prosocial option. The between-subject component consisted of analyzing choice for a prosocial option in two independent groups. Only one group experienced the Self-tact condition (see subsection below for more details). In addition, we evaluated whether there were statistically significant changes in choosing a prosocial option by comparing prosocial choice in two timepoints (i.e., before and after the Self-tact condition). To evaluate the effects of different types of nudge arrangements as in Oda et al. (2023), we analyzed choice towards a prosocial

option in four groups. In the within-subject component, we had an A-B-A design, and we collected measures of the independing variables before and after a *Self-tact condition*, which provided an opportunity to evoke a self-descriptive verbal behavior about the participant's identities. We chose the A-B-A design because it provides a simple and strong demonstration of experimental control when manipulating an independent variable (i.e., Self-tact condition). For Study 2, we had a within-subject A-B design in which participants experienced two conditions (i.e., *No Decoy* and *Decoy*). We chose an A-B design to quickly assess the effects of the presence and absence of a decoy. Multiple presentations of these conditions could be perceived as artificial and would not reflect the manner in which decoys are applied. The order of presentation of these conditions were randomly and evenly distributed by Qualtrics.

Dependent Variables

The primary dependent variable was choosing a prosocial option in the presence of a choice task, measured in terms of frequency. We operationally defined it as selecting the choice option (i.e., clicking/selecting with the mouse cursor) and submitting the choice option (i.e., clicking "submit") that describes prosocial behavior (e.g., "I want to learn more about DEI"). In the present studies, our primary goal was to evaluate the effects of *antecedent* control of choice. However, as in Oda et al. (2023), we provided real consequences that correspond to the participants' choice after survey completion. For example, a participant who chose to receive information about a DEI issue had access to it at the end of the survey.

A secondary dependent variable was latency to submit an answer in a choice opportunity. We operationally defined it as time elapsed between the presentation of a choice opportunity and clicking "submit". The Qualtrics platform recorded data of time spent during each choice

opportunity. This time-based measure could correspond to processes related to overt and covert decision making.

Another dependent variable was frequency of correct recalling of the choice. At the end of the survey, participants were asked to recall their choice. Correct recalling was defined as accurate selection (i.e., point-to-point correspondence between previous choice and option that describes previous choice) of option submitted in choice opportunities. For instance, if the participant chose to receive information about DEI, correct recalling would be selecting the option that describes they chose to receive information about DEI.

Independent Variables, Experimental Design and Procedures

The Self-tact condition was the primary independent variable in Study 1. It consisted of a multiple-choice question that allowed multiple answers (i.e., "Which of the following minority, underserved, marginalized, and/or underrepresented groups are you part of?") followed by identity options (e.g., age, ethnicity, sexual orientation; see Figure 2). Replicating Oda et al. (2023), we presented conditions with different arrangement of verbal stimuli and nudges, which served as independent variables. For Study 2, we evaluated the effects of a decoy option.

Instead of having hypothetical scenarios, we presented real choice opportunities (e.g., sign up to receive information about DEI initiatives) that lead to real consequences (e.g., receiving information about DEI initiatives at the end of the survey). To ensure rigor, these studies were conducted independently, concomitantly, and with separate sets of participants. Breaking it down into multiple and more focused experiments could allow better interpretation of the effects of independent variables. In an attempt to ensure that participants were not part of more than one study, the experimenter advertised the study in separate groups of classes. After

they completed the survey, they were redirected to a separate Qualtrics survey where participants included the course number and their names to receive extra credit.

Study 1 – Positive/Negative Autoclitics and Defaults

Study 1 was a systematic replication of Oda et al. (2023) and evaluated the effects of nudge arrangements in the form of positive and negative autoclitics and defaults (i.e., boxed checked or unchecked) on the behavior of choosing a prosocial option (i.e., promotion of DEI through acquisition of knowledge about a social issue). We presented choice opportunities with one of four nudge arrangements (i.e., option to enroll with unchecked box with no default, option to not enroll with unchecked box with no default, option to enroll with checked box with default, and option to not enroll with checked box with default); see Table 1.

Each participant had two choice opportunities. Table 1 describes choice opportunities, figure 3 provides a screenshot example of the choice task. We chose statements related to DEI that described similar behaviors (i.e., to learn how others and how one can promote DEI) to minimize confounds when analyzing the effects of the independent variables. After they submitted their first-choice opportunity, if not randomly assigned to the control group, the self-tact condition was presented. After the self-tact condition, participants had a second-choice opportunity with the same arrangement assigned in the first-choice opportunity. For instance, if the positive autoclitic frame with a checked box was presented in the first opportunity, they were exposed to the same arrangement in their second-choice opportunity. We presented the same arrangement to minimize potential effects of different frames, and analyzed the effects of the self-tact condition on prosocial choice. We compared repeated measures of prosocial behavior for each participant in a single-subject design and compared groups of different autoclitic and default frames in a between-subject design (as described in Oda et al., 2023).

More specifically, in a within-subject design analysis, we collected measures of the dependent variable when exposed to one of four choice arrangements, and before and after the self-tact condition if the participant was assigned in the self-tact group. Participants were randomly assigned by Qualtrics to a self-tact group or control group (50% per group). For the between-subject analysis before the self-tact condition, we used a chi-square analysis to evaluate differences across the four groups of nudge arrangements.

Oda et al. (2023) required from participants an observing response with the function of an attention check. Attention checks are frequently employed by researchers as a means to identify unengaged participants who might compromise the integrity of data quality (Geisen, 2022). It can have the form of a factual statement that needs to be selected by the participant. This involves detecting individuals who may not carefully read questions, rush through surveys, skip questions, respond randomly. In Oda et al. (2023) study, participants had to click on a factual statement that was applicable to them (i.e., "I am a student") before selecting an option in their choice task. In the present study, we used a commitment request instead. Geisen (2022) conducted a study on Qualtrics to evaluate different methods to improve quality data. It compared the use of commitment request (i.e., selecting, "I'll commit to provide thoughtful answers") and factual statement. The former, which could be interpreted as a behavioral contract (Bailey et al., 1970; Wysocki et al., 1979), produced higher levels of data quality compared to the latter. Only participants who selected the commitment response had their data analyzed in the present studies.

Study 2 – Decoy

As mentioned previously, research on decoy effects typically manipulates monetary price (e.g., Devetag, 1999) to influence consumers to spend more than they need. In the present study,

we manipulated *response effort* of the described advocacy engagement by adding a decoy that can influence respondents to engage in *some* level of advocacy to promote DEI.

During the No Decoy condition (Figure 4), participants were presented with two options only: (a) to receive information about DEI *and* to learn how to promote it (i.e., prosocial option) or (b) to not receive it (i.e., no prosocial option). In the Decoy condition (Figure 5), we added a decoy option: to receive information about DEI (i.e., lower effort prosocial option). To interpret potential order effects, half of the participants were assigned to the No Decoy condition first. We added an attention check question (as described above) at the beginning of the survey.

Recalling Choice, Social Validity, and Self-Report

Studies 1 and 2 focused on experimental manipulations of choice environments that can evoke choosing. After the experimental phase, participants reported their choice and potential variables that influenced their behavior. They were instructed to recall choice, to provide information about social validity of procedures, and self-report of decision making. An example of a statement presented at this phase is, "At the beginning of this survey, you were presented with the choice to receive or not information about DEI. To the best of your ability, try to recall your answer. Did you choose to receive information about DEI opportunities?". The options were "yes", "no", and "I am not sure".

Following that, participants were asked to report the rationale for making decisions for all previous phases (Figure 6). An example of a statement was, "Try to recall your decision-making process. Provide your rationale for deciding whether to receive or not information about DEI. What influenced your choice?". We presented an essay text box to allow text entry. As mentioned previously, providing verbal behavior about the decision making was not our primary

dependent variable, but we collected information that can inform further qualitative and quantitative analysis to better understanding potential controlling variables of decision making.

Finally, we collected data on the social validity of the procedures. We presented participants with a screenshot of the questions previously displayed, and ask them to rate the statement (5-point Likert scale, 1 = Strongly Disagree, 5 = Strongly Agree) "The way the choice was presented made me feel manipulated." (Figure 8).

Demographic Information and Redirection to External Link

At the end of the survey, we asked participants demographic questions about their age, gender identity, sexual orientation, ethnicity, language, and cultural identities. To ensure confidentiality, we did not ask their names. At the end of the survey, participants who chose a prosocial option to learn more about DEI in the department received a link that provided information about DEI initiatives (e.g., KU ABS DEIB Committee website, KU Community Toolbox website). Those who chose to learn *and* to take action received a link that provide information about initiatives and ways to engage in prosocial behavior.

To ensure confidentiality and provide extra credit for participation, after completing the survey, students were automatically redirected to a separate Qualtrics survey to provide information about their name and course.

Data Analysis

We collected and analyzed the frequency of prosocial choice in all studies. For Study 1, we used a one-way between-subject ANOVA to calculate whether there was a significant change in choosing a prosocial option before and after the Self-tact condition. We calculated difference scores for each nudge arrangement group by subtracting the percentage of choosing a prosocial choice before the Self-tact condition from the percentage after the condition. In addition, to

extend Oda et al.'s analysis comparing four groups of nudge arrangements, we used a chi-square analysis to compare the four nudge arrangement groups. For Study 2, we analyzed responding during the Decoy and No Decoy conditions. We report below data derived from the A-B single-subject design for all participants in the form of count for each condition.

Results

Study 1

Demographic Information and Group Assignment

Data Inclusion based on Power Analysis. We analyzed data of 60 participants. We made the decision to finish data collection after we reached at least 95% of power and all nudge arrangement groups had the same number of participants (i.e., 15 each). All participants passed the attention checks and completed the entire survey. Table 2 displays demographic information in the form of aggregated data of all participants.

Most participants (51 out of 60, 85%) indicated belonging to the 18-24 age range, six (10%) within 25-34, two (3.3%) within 35-44, and one (1.7%) preferred not to answer. In terms of gender identity, 51 participants (85%) self-identified as female, six (10%) as male, one (1.66%) as female and preference to not use labels, one (1.66%) as male and preference to not use labels, and one (1.66%) preferred not to answer. For sexual orientation, 46 (76.7%) reported identifying as straight, four (6.7%) as bisexual, two (3.3%) as asexual, two (3.3%) reported preference to not use labels, one as bisexual/pansexual/questioning (1.6%), one (1.6%) as gay, one (1.6%) as lesbian, one (1.6%) as pansexual, one (1.6%) as questioning, and one (1.6%) preferred not to answer.

Thirty-nine (65%) participants identified as White, five (8.3%) as Asian/Pacific Islander, four (6.7%) as Hispanic/Latinx, three (5%) as Hispanic/Latinx/White, two (3.3%) as Multiracial,

two (3.3%) as Black/African American/Other, one (1.68%) as Black/African American, one (1.68%) as Multiracial/White, one (1.68%) as Hispanic/Latinx/Multiracial, one (1.68%) as Asian/Pacific Islander/White, and one (1.68%) preferred not to answer. English was the first and only language for 46 (76.7%) participants, three (5%) had English and another language as their first languages, one (1.66%) had English and Spanish as first languages, and one (1.66%) had English and Korean as first languages. For participants who did not have English as their first language, their first languages were Spanish (three participants, 5%), Vietnamese and other languages (two participants, 3.3%), Amharic (one, 1.66%), Haitian/Creole (one, 1.66%), Urdu/Punjabi/Hindi (one, 1.66%), and one (1.66%) preferred not to answer. Qualtrics randomly assigned participants for the Self-tact and No Self-tact groups (i.e., 30 each) and for each of the four nudge arrangement groups (i.e., 15 each).

Prosocial Behavior across all Nudge Groups

From a total of 120 choice opportunities (i.e., two for each of the 60 participants; Choice 1 and Choice 2), there were 60 instances of prosocial behavior (i.e., when participants selected the prosocial choice). Figure 9 shows the percentage of choosing the prosocial option during all choice conditions for all four nudge arrangement groups. For Group 1 (unchecked box with positive frame), eight out of 15 (53.3%) participants chose the prosocial option during the first-choice opportunity (i.e., Choice 1), 10 (66.7%) chose the prosocial option during the second opportunity (i.e., Choice 2). For Group 2 (unchecked box with negative frame), prosocial choice occurred for seven (46.7%) participants during first choice, and nine (60%) during second choice. For Group 3 (checked box with positive frame), eight (53.3%) and 12 (80%) participants chose the prosocial option during first and second choice, respectively. For Group 4 (checked box with negative frame), two (13.3%) and four (26.7%) participants chose the prosocial option

during the first and second choice, respectively. A chi-square analysis showed no statistically significant differences between groups (p=0.08). Table 3 shows the rationale for decision making for all participants. We present their verbal behavior with no edits, which includes misspelling and rationale that may not match their previous choice (i.e., incorrect recall). We review and provide interpretations of these verbal reports in the Discussion section.

Prosocial Behavior for Self-Tact Group

Figure 10 depicts count of prosocial behavior before and after the Self-tact condition for all participants who were randomly assigned by Qualtrics to experience the condition (N=30). During the first-choice opportunity, 15 participants chose the prosocial option, and 15 did not choose it. After the Self-tact condition, 14 of the 15 participants who selected the prosocial option in the first opportunity chose again the prosocial option, one did not choose the prosocial option. All participants who did not choose the prosocial option during Choice 1 selected again not to choose the prosocial option during Choice 2. A one-way ANOVA showed no statistically significant changes between groups (p=0.39). To supplement the analysis, we conducted nonparametric proportion chi-square tests, which is a nonparametric test that accounts for the binomial data (i.e., prosocial or non-prosocial choice). It resulted in no statistically significant differences between groups (p=0.99, chi-square=0.08).

Latency to Click "Submit" for all Nudge Groups

Figure 11 illustrates latency (in seconds) to submit an answer for all participants during their first-choice opportunity. Each circle represents individual data (N=60) and each nudge group is color coded (i.e., pink for Group 1, blue for 2, yellow for 3, and green for 4). The mean for Group 1 (Unchecked Positive) was 8.34 seconds (SD=5.13, SE=1.33), Group 2 (Unchecked Negative) was 12.29 s (SD=12.36, SE=3.20), Group 3 (Checked Positive) was 5.54 s (SD=4.45,

SE=1.15), and Group 4 (Checked Negative) was 7.73 s (*SD*=5.79, *SE*=1.50). We conducted an analysis using a Kruskal-Wallis test. This nonparametric test evaluated whether there were differences in the median latency across groups and revealed no statistically significant differences between the four groups (K-W=4.40, *p*=0.22, *df*=3).

Figure 12 shows latency data comparison for Positive (yellow circles) and Negative (purple circles) frame groups with checked and unchecked boxes groups combined. The mean latency for the Positive group was 6.94 s (*SD*=4.93, *SE*=0.90) and 10.01 s (*SD*=9.77, *SE*=1.78) for the Negative Group. To compare whether there were statistically significant differences between these two groups, we conducted an analysis using a Mann-Whitney U test, also known as the Wilcoxon rank-sum. This nonparametric test evaluated whether there were differences in the median latency across two groups, and revealed no statistically significant differences between groups (M-W U = 390, *p*=0.38).

Recall of Past Choice

Figure 13 presents the count of reports recalling past choice for all participants in each group. For Group 1, 27 participants recalled their choice selection correctly and three recalled it incorrectly. For Group 2, 22 participants had accurate recall, four recalled incorrectly, and four reported not being sure if they remembered their previous choice. Group 3 had 28 participants reporting correct recall and two incorrectly. Group 4 had 18 correct recalls, 11 incorrect, and one participant was not sure about their previous decision.

Social Validity of Choice Presentation

We asked participants to report whether they felt manipulated with the *way* that the choice was presented (i.e., presence or absence of checked box as default, positive or negative frame). Figure 14 illustrates data for all participants. For Group 1, eight participants agreed that

the choice presentation made them feel manipulated, two selected “neutral”, four disagreed and one strongly disagreed. Group 2 had six participants who agreed, three neutral, four disagreed, and two strongly disagreed. For Group 3, three agreed, two selected “neutral”, five disagreed, and five strongly disagreed. For Group 4, three strongly agreed that the choice presentation made them feel manipulated, three agreed, four selected “neutral”, three disagreed, and two strongly disagreed.

Study 2

Demographic Information

Data Inclusion. We analyzed data of the 56 participants who passed attention checks and completed the entire survey during the same period of Study 1. Although we proposed to target 10 participants and focus on within-subject analysis only, we made the decision to finish data collection on the same date that we ended for Study 1 and use this opportunity to analyze potential significant differences between the Decoy and No Decoy condition. As previously mentioned, this sample was independent from Study 1, we recruited participants from different courses at the university.

Table 4 displays demographic information for all participants. Most participants (54 out of 56, 96.4%) reported being in the 18-24 age range, and two (3.6%) in the 25-34 age range. Forty-nine participants (87.5%) identified as female, two (3.6%) as male, two (3.6%) as female/queer, one (1.76%) as female/gender-fluid, one (1.76%) as female and does not use labels, and one (1.76%) as male/other. For sexual orientation, 40 (71.4%) reported identifying as straight, seven (12.5%) as asexual, four (7.1%) as bisexual, one (1.8%) as bisexual/other, one (1.8%) as queer and reported preference to not use labels, one (1.8%) as straight/questioning, one (1.8%) as gay, and one (1.8%) as lesbian.

Forty (71.4%) participants identified as White, five (8.9%) as Hispanic/Latinx, four (7.1%) as Hispanic/Latinx/White, two (3.6%) as Black/African American/Other, two (3.6%) as Black/African American, two (3.6%) as Asian/Pacific Islander, and one (1.8%) selected "other". English was the first and only language for 45 (80.4%) participants, 3 (5.4%) had English and another language as their first languages, 2 (3.6%) had English and Spanish as first languages, 1 (2.43%) had English and Vietnamese as first languages, and 1 (2.43%) had English and Somali as first languages. For participants who did not have English as their first language, their first languages were Spanish (1 participant, 2.43%), Polish (1, 2.43%), Vietnamese (1, 2.43%), and one (2.43%) did not specify their first language but reported being bilingual/multilingual. In the self-identification question related to minority groups, 33 (59.9%) reported being part of at least one minority group, 20 (35.7%) reported not being part of a minority group, and three (4.4%) preferred not to answer.

Decoy and No Decoy Condition

Figure 15 presents data for all participants during the Decoy condition. When presented with three options, 32 participants (57.1%) chose to not receive information about DEI, 14 (25%) chose to receive information *and* learn ways to promote DEI (i.e., "high-effort DEI"), and 10 (17.9%) chose to receive information only ("low-effort DEI"). Figure 15 also shows data for all participants during the No Decoy condition. Thirty-six participants (64.3%) chose to not receive information about DEI, and 20 (35.7%) chose to receive information and promote it. In a within-subject analysis, most participants (i.e., 50 out of 60, or 83.3%) did not change their decision across these conditions. Table 5 shows the choice for each participant and their rationale for decision making. As in Study 1, we present their verbal behavior with no edits, which includes misspelling and rationale that may not match their previous choice.

By comparing prosocial choice across conditions, we observe that a total of 24 participants chose a prosocial option when presented with three options (i.e., Decoy condition). Fourteen participants choose the higher-effort option in the Decoy condition. For the No Decoy condition, which presented only two options (higher-effort option and the non-prosocial option), 20 participants selected the prosocial option.

Recall Past Choice

Figure 16 shows recall of past choice for the Decoy and No Decoy conditions. For both conditions, 52 participants recalled correctly and four incorrectly their choice during the Decoy and No decoy conditions.

Social Validity of Choice Presentation

Participants reported whether they felt manipulated with the way the choice was presented. Results are illustrated in Figure 17. For the Decoy condition, one participant strongly agreed that the choice presentation made them feel manipulated, 13 agreed, 14 selected "neutral", 17 disagreed and 11 strongly disagreed. For the No Decoy condition, 13 participants agreed that the choice presentation made them feel manipulated, 14 selected "neutral", 18 disagreed, and 11 strongly disagreed.

Discussion

Studies 1 and 2 examined the effects of verbal frames and nudge arrangements on prosocial choice. We also evaluated latency to click "submit", recall and rationale of choice, and social validity of procedures. For both studies, verbal and nudge arrangements did not seem to influence prosocial choice. Recall, social validity of procedures, and verbal behavior about the rationale for choice provided additional information that can help interpret the controlling variables for choosing the prosocial choice or not. Below we discuss the results of these studies.

Study 1

One of the goals of Study 1 was to evaluate the effects of nudge arrangements in the form of checked and unchecked boxes and positive and negative frames on prosocial choice (i.e., choosing to receive information about DEI). In Study 1, each of the 60 participants had two choice opportunities. We found that prosocial behavior happened in half of the opportunities (i.e., 60 out of 120). Based on previous literature on nudge arrangements, we hypothesized higher prosocial choice in the presence of negative verbal frames. Our study did not replicate these results. As displayed in Figure 9, prosocial choice had similar percentages for groups 1 (Unchecked box with Positive frame), 2 (Unchecked box with Negative frame) and 3 (Checked box with Positive Frame), with the higher percentage for group 3.

External Validity: Generality of Previous Literature Findings

Johnson et al. (2002) and Oda et al. (2023) examined the effects of nudge arrangements in a marketing survey with adults recruited online and academic preferences questionnaire with undergraduate students, respectively. In these studies, participants could choose or not to receive information about health services or additional academic resources. Study 1 conducted a systematic replication of these manipulations. Understanding the generality of previous literature findings requires critically examining potential issues related to external validity.

External validity refers to the extent that the results can be generalized to other circumstances (Johnston & Pennypacker, 2020). We wanted to examine whether different nudge arrangements will reliably influence choice in a broad range of conditions. Although we did not replicate results from previous studies in terms of nudge arrangements, an important consideration is that our study consisted of a systematic replication that involved the inclusion of an independent variable (i.e., Self-tact condition) and DEI as a topic that could promote prosocial

choice. The independent variable related to DEI was not previously examined in the literature. DEI is a topic that can be considered more emotionally and socially charged than receiving information about health or extra academic activities. Thus, the verbal stimulus "DEI" in a survey can be a discriminative stimulus that evokes other behavioral processes (e.g., escape from DEI information overload), as we discuss in the sections below. Additional analysis about the generality of nudge arrangements related to DEI is warranted given that the study was conducted with a limited number of participants. It is possible to question whether the way we framed DEI influenced participants' responding. In our studies, we decided to approach DEI as a topic in general terms. Future studies could evaluate prosocial choice in the form of receiving information about more specific DEI topics (e.g., learning about advocacy and allyship strategies, creating safe spaces, identifying microaggressions) that are tailored to a specific population. By increasing the saliency of a specific topic, the value to receive DEI information could increase, leading to more prosocial choice. Another consideration is the generality of our finding across subjects. Levels of engagement with and support for DEI initiatives can vary across environments. Our sample consisted of students from a Midwestern region in the U.S., with the majority identifying as White, female, and straight students. Cultural variables could influence how participants responded to nudge arrangements implemented in the study.

Internal Validity: Appropriateness of Causal Inferences

Another goal of Study 1 was to evaluate the effects of a Self-tact condition on prosocial choice. For this manipulation, Qualtrics randomly assigned half of the participants for this condition (i.e., 30 participants). Half of them (i.e., 15 participants) did not select the prosocial option in the survey before the Self-tact condition. After that, none of these participants changed their selection to a prosocial option. The Self-tact condition consisted of a multiple-choice

question about the participants' identities and membership in minoritized groups. Although no previous literature has examined the effects of self-tacts of identities on prosocial behavior in the behavior-analytic literature, our original hypothesis was that this condition could evoke more responding towards the prosocial choice. That is, a participant who can describe their social identities may become more "aware" of social issues and might be more likely to behave prosocially.

Given that the self-tact condition did not produce change in 15 participants who initially did not choose the prosocial option before the condition, we can question the internal validity of procedures. Internal validity refers to the appropriateness of attributing a functional role to independent variables (Johnston & Pennypacker, 2020). We can hypothesize that the presentation of a single question was not salient enough to produce differentiated responding, leading to reduced internal validity. Another limitation is that the calculation of difference scores as part of the statistical analysis could be affected by a floor effect for the Checked Box Negative Autoclitic group, which presented lower percentage of prosocial choice compared to the other groups. Future studies could replicate the methods by increasing the sample size and modifying the self-tact condition. This can include changing the response modality (e.g., essay text instead of multiple choice) that can increase exposure to verbal behavior related to social issues that can increase the value of behaving prosocially.

Motivating Operations for Receiving DEI Information

In the present study, we manipulated discriminative stimuli (SDs) in the form of nudge arrangements. Given that most participants did not change their choice options across opportunities in the presence of these SDs, we can hypothesize that other antecedent variables in the form of motivating operations (MOs) were also influencing their responding. The MO

concept evolved from Michael's (1993) interpretation of antecedent variables that can alter the value of a reinforcer or punisher and alter the frequency of operant response classes related to the reinforcer or punisher (Lechago, 2019; Michael, 1993; Poling et al., 2020). Establishing operations (EOs) are MOs that increase the reinforcing or punishing value or effectiveness of a stimulus and evoke the operant response class for that stimulus, whereas abolishing operations (AOs) decrease the value or effectiveness of a stimulus and abates operant response classes (Michael & Miguel, 2019).

Although it was not the primary goal of this study to qualitatively analyze the rationale of decision making, verbal reports made by participants (presented on Tables 3 and 5) can give insight on potential controlling variables of their behavior of selecting or not to receive DEI information. Only six (i.e., participants 20, 44, 50, 54, 56 and 60 on Table 3) out of 60 participants reported that their choice was influenced by features directly related to the independent variable (e.g., box checked, verbal frame, choice presentation). Based on their verbal report, we can interpret that most participants' choice was influenced by MOs to receive or not DEI information. On Table 3, participants 1-11 expressed that they wanted to learn more about DEI. This can be interpreted as behavior controlled by an establishing operation that increases the value of DEI information. Some of these participants (e.g., participants 1, 2, 3, and 4) also self-identified as a minority or a person of color, which could influence this value increase. For example, learning more about DEI at the university may serve as a way to increase their sense of identity and belonging.

Table 3 displays reported rationale for participants who chose not to receive information about DEI in at least one of the choice opportunities (e.g., participants 24-29, 31-40, 42-46). Common answers referred to the fact that they did not want to learn about DEI because they

already took courses on it, were exposed to these topics already, or didn't want to receive more emails or spams related to DEI (e.g., participants 25-31, 33-36, 38-40). This can be interpreted as an abolishing operation of satiation of DEI information. By being exposed to DEI in emails, courses, at the university or their sororities over time, the abundance of information may have become aversive. This could be related to negative reinforcement as a behavioral process. Students' behavior could be reinforced by avoiding the aversive stimulation of DEI information overload.

Other Controlling Variables

In studies that asked students whether they want to receive information about a topic that their university promotes, we can expect that social desirability bias may influence their response towards choosing the prosocial choice, even when they are not motivated to do so. Social desirability bias consists of a systematic error in which participants present answers that are more socially acceptable in their environment that may not reflect their actual motivation and values (Bispo Júnior, 2022; Chung & Monroe, 2003; Latkin et al., 2017). This type of bias could be influencing responding of participants who chose to receive DEI information, potentially leading to reduced internal validity. For example, participant 51 on Table 3 mentioned that they chose to learn more because they thought it was the "right answer". For participants who did not choose the prosocial option, it is possible that social desirability was present as well. However, by interpreting that individuals' behavior might be influenced by negative reinforcement of avoiding overload of DEI information, the aversiveness of the excess of information about the topic seems to overpower the value of social perception.

Other controlling variables related to social acceptability could be the presence of a rule. Rules can be defined as verbal stimuli that are contingency-specifying and function-altering

(Schlinger, 1990). Some participants seem to be supportive of DEI but did not elaborate on their reasoning. Instead, they mentioned in their rationale adherence to social practices (e.g., participant 53 on Table 3), university policies and practices (e.g., participants 57-59), or described personal values (e.g., participant 45) that influenced their behavior. We can interpret their behavior as multiply controlled and potentially influenced by antecedent verbal stimuli that specify relations between events (e.g., prosocial behavior could be influenced by the rule, "if the university wants me to feel included, they must have good DEI resources for me to learn about").

As stated in the introduction, *choosing* and *reporting a rationale for a choice* are different operant behaviors that have their own controlling variables. Although participants reported why they made specific choices, the controlling variables of the choice can only be inferred. Future studies could develop ways to empirically evaluate the effects of rules, social desirability, past history, exposure, and engagement with DEI on prosocial choice.

Latency to Click "Submit", Recall of Choice, Social Validity, and Ethics

Secondary dependent variables included latency to click "submit", recall of prosocial choice, and social validity of choice presentation. Regarding latency, Figures 11 and 12 show that latency was longer for groups with negative frames, corroborating our hypothesis that these frames may evoke more covert or overt behavior to make a choice. According to our data, participants spent more time in the presence of negative frames before submitting an answer. However, even with longer latencies, negative frames did not produce a higher number of accurate recalls. As illustrated in Figure 13, positive frames produced more correct recalls than negative frames. Group 4 (Checked box with Negative frame) produced the higher number of incorrect recalls across all groups.

Ethical considerations. As discussed in the Introduction, nudge manipulations can raise ethical concerns related to the right to make an informed choice and to give explicit consent (Kuyer & Gordijn, 2023; Schmidt & Engelen, 2020). Although Thaler and Sustain (2008) argue that nudges respect freedom by maintaining the presentation of options, it is possible to argue that subtle changes in the way choice is presented (e.g., negative frame) can interfere with someone's informed choice. Data from Study 1 showed that participants did spend more time in the presence of negative frames. Although the opportunity to observe the choice options was there, we can interpret that negative frames increased decision making latency and created inaccurate responding in terms of recall. These frames could have evoked loose stimulus control on the choice options, leading to uncertainty (e.g., selection of "I don't know" when asked to recall choice) or confusion (e.g., incorrect correspondence between choice selection and recall). Given that positive frames are prevalent in academic settings, it is possible that negative frames require more time to read and to respond to, potentially leading to increased difficulty in recall. In terms of social validity of choice presentation, group 3 (Checked box with Positive frame) had more reports of not feeling manipulated by the choice presentation. In contrast, group 4 (Checked box with Negative frame) was the only group that had reports of participants strongly agreeing that the choice presentation made them feel manipulated. Recall and social validity results of the present study can indicate that using positive frames are preferrable as a way to evoke more correct recalls – which can indicate a more informed choice – and more reports of having their autonomy respected by not feeling coerced or manipulated. A potential limitation of the study was that we only presented one question to evaluate the social validity of choice presentation. In addition, the question asked participants whether they felt "manipulated". It is possible that the phrasing influenced participants responding. Future studies could include more

questions to evaluate social validity of procedures, as well as require a rationale for their answer that can provide information about potential controlling variables of their behavior.

Study 2

Study 2 aimed to evaluate the effects of a Decoy and No Decoy conditions on prosocial choice. Most participants (i.e., 57.1%) chose not to receive information about DEI. In a within-subject analysis, most participants (i.e., 50 out of 60) did not change their decision (towards a prosocial choice or not) across these conditions. We offer interpretations of these findings below.

Decoy vs. No Decoy

By comparing prosocial choice across conditions, we observe that a total of 24 participants chose a prosocial option when presented with three options (i.e., Decoy condition). The higher-effort option (receive *and* promote DEI) was chosen by 14 participants in the Decoy condition. For the No Decoy condition, which presented only two options (higher-effort option and the non-prosocial option), 20 participants selected the prosocial option. Statistical analysis indicated no statistically significant differences between these conditions. In addition, these two conditions had similar results in terms of accurate recall and social validity.

Although Studies 1 and 2 were independent and conducted with different participants, there were similarities in terms of procedures. For Study 1, we had nudge arrangements in the form of checked/unchecked boxes and positive/negative frames as the independent variables. For Study 2, the presence of a decoy was the independent variable. Given that there were no statistically significant differences of prosocial choice between conditions, we can hypothesize that the presentation of the decoy was not salient enough to produce differentiated responding. Future studies could replicate the procedures by framing the decoy option in a different way or increasing the difference in response effort described by each option.

Controlling Variables for Prosocial Choice

Similarly to Study 1, we collected data on verbal behavior that describes the rationale of previous choice. As mentioned previously, most participants chose not to receive DEI information. Table 5 shows reported rationale for participants who chose not to receive information about DEI in at least one of the choice opportunities (e.g., participants 1-35, 41, 47). Common answers referred to the fact that they did not want to learn about DEI because they learned about these topics already or did not want to receive more notifications, messages, emails or spams related to DEI (e.g., participants 1-2, 5-6, 9-11, 14-15, 18, 22). As for Study 1, this can be interpreted as an abolishing operation of satiation of DEI information. In terms of establishing operations that make DEI information valuable, we had participants (e.g., participants 36-38, 48, 49), that reported being part of minority groups and wanted to learn more about how the university promotes it. Social acceptability bias could influence choice for some participants (e.g., participant 16) who reported "feeling bad" after choosing not to receive DEI information in the first-choice opportunity.

Practical and Ethical Considerations

In Study 2, the presence of a decoy did not produce statistically significant changes in terms of choosing a prosocial option, correctly recalling past choice, and social validity when compared to the absence of the decoy. Future research could replicate these procedures with other populations and settings to better evaluate the effects of decoys in DEI choice. Although there were no significant differences, from a practical standpoint, it can be relevant to offer options that involve or not responses with different levels of effort. In the present study, we hypothesized that the presence of a decoy could promote choice toward a prosocial option that describes a low- or high-effort response. More participants chose the high-effort response choice

(i.e., learning about DEI and learning how to promote it) when presented with the No Decoy condition (i.e., 20) compared to high-effort response in the Decoy condition (i.e., 14). Increasing behaviors related to DEI advocacy (including choice to learn how to advocate) is as relevant as acquiring knowledge about it.

Future studies could investigate ways to increase prosocial choice in the form of advocacy. From an ethical perspective, given that accurate recall of choice procedures and social validity of choice presentation were similar across conditions, it seems that the decoy as a nudge and independent variable may be a good alternative for arranging choice options when presenting alternatives related to DEI to individuals. Although most participants reported not feeling manipulated by the way the choice was presented in Study 2, some participants (i.e., 14) who reported feeling manipuated. Future research could investigate the controlling variables of the behavior of reporting feeling manipulated.

Discussion Summary and Final Remarks

Most participants in Study 2 and half of the participants in Study 1 did not choose the prosocial choice in the presence of nudge arrangements. For both studies, we can interpret that nudge arrangements, as independent variables, may not have served as salient discriminative stimuli to evoke prosocial choice. A potentially relevant variable that could explain most of the participants' behavior was the presence of abolishing operations to learn about DEI, which could be explained by negative reinforcement of avoiding DEI information overload.

Limitations of our studies include lack of saliency of nudge arrangements as described in previous sections. Contributions of the present studies include collection and analysis of empirical data related to DEI. From a social justice perspective, it is important to increase awareness of social issues and advocacy behaviors related to DEI. Our data suggest that

manipulating SD only by arranging nudges may not be sufficient to promote prosocial choice. Thus, DEI initiatives may need to focus on changing MOs that might be influencing choice.

Better understanding of choice can help promote prosocial choice that respects autonomy, consent, and can inform policy decisions related to diversity, equity, and inclusion. Studies 1 and 2 examined different ways to present choice. Although we did not observe statistically significant differences between arrangements on promoting prosocial choice, social validity of procedures and recall data indicate that negative frames should be avoided. Future studies could examine the effects of more tailored DEI interventions, evaluate the presence of more specific DEI frames, increase the saliency of self-tacts related to cultural identities, and investigate MOs related to the promotion of social justice.

Figure 1

Experimental Design for Studies 1 and 2

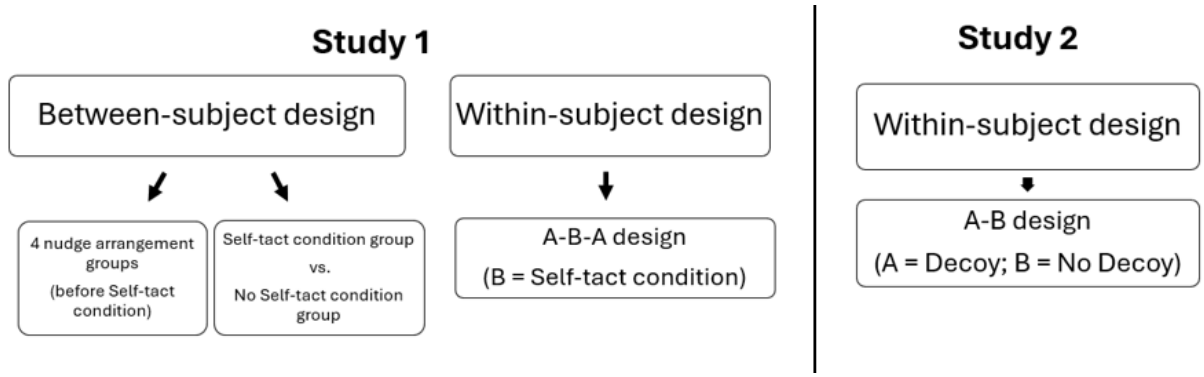


Figure 2

Self-Tact of Identities Condition (Study 1)

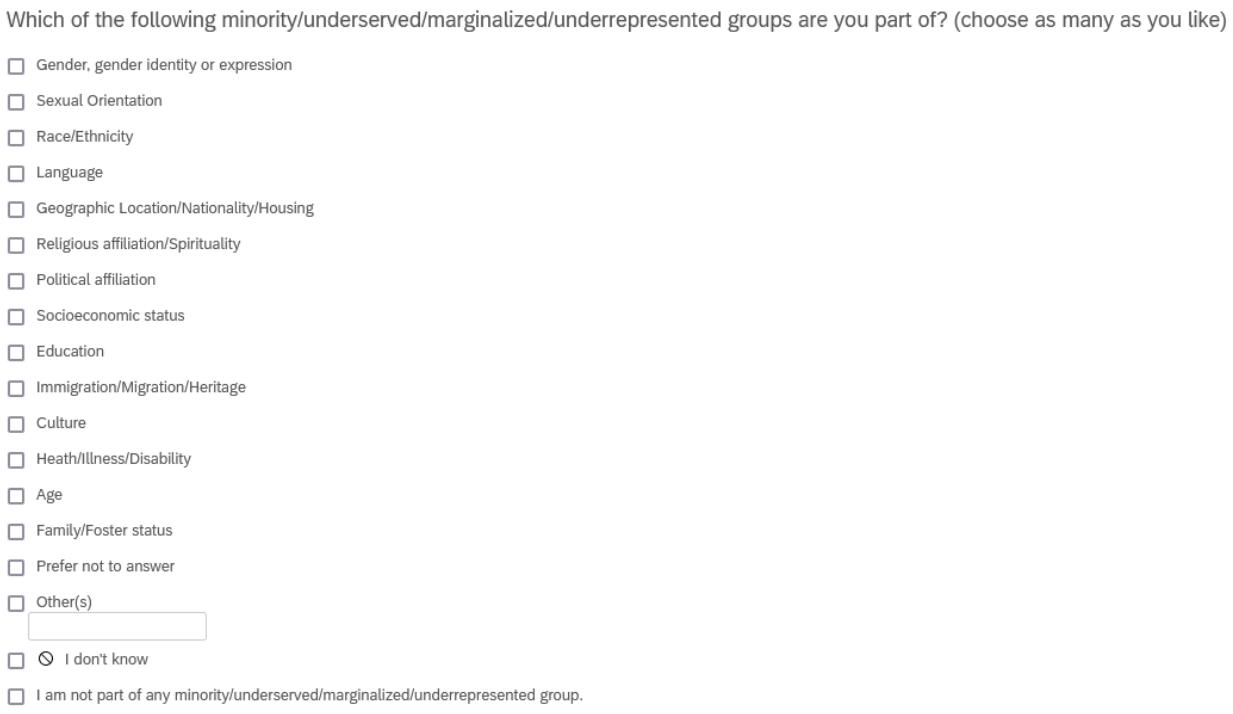


Figure 3

Choice Condition Example (Study 1) – Positive Frame with Unchecked Box

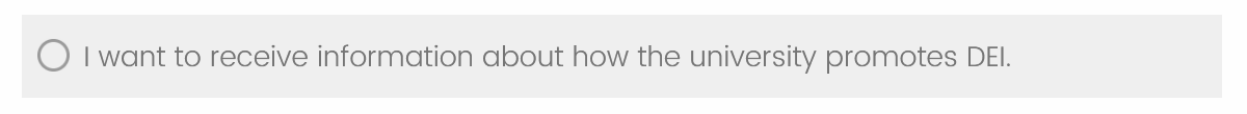


Figure 4

No Decoy Condition Example (Study 2)

Figure 5

Decoy Condition (Study 2)

Figure 6

Recalling Past Choice

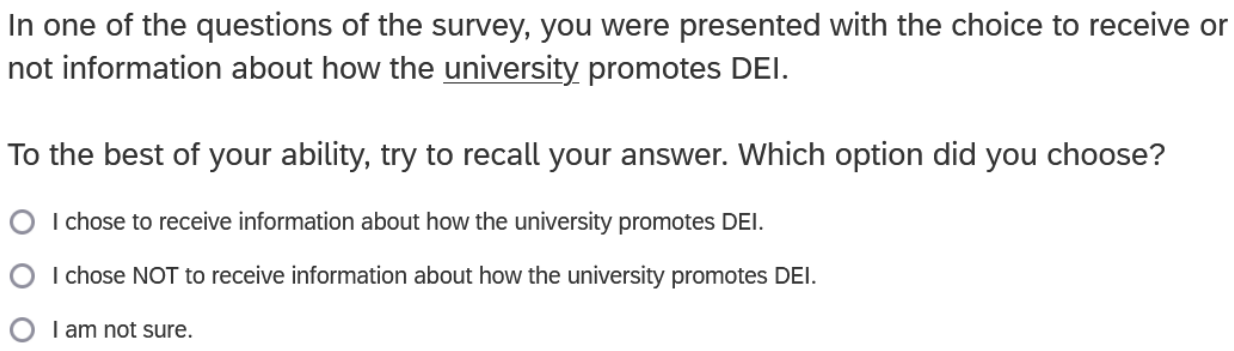


Figure 7

Verbal Behavior about Past Choice

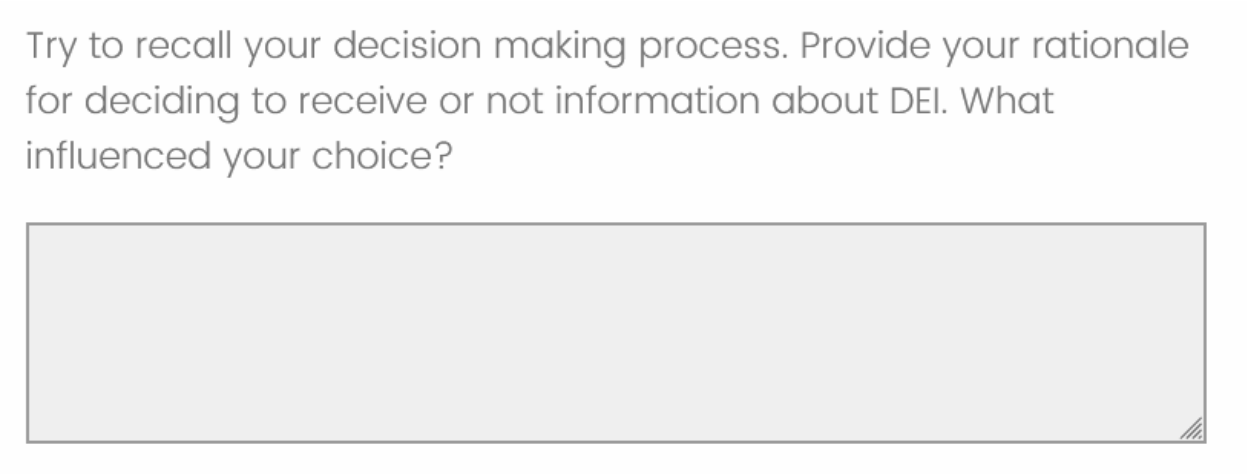


Figure 8

Social Validity of Choice Presentation Example

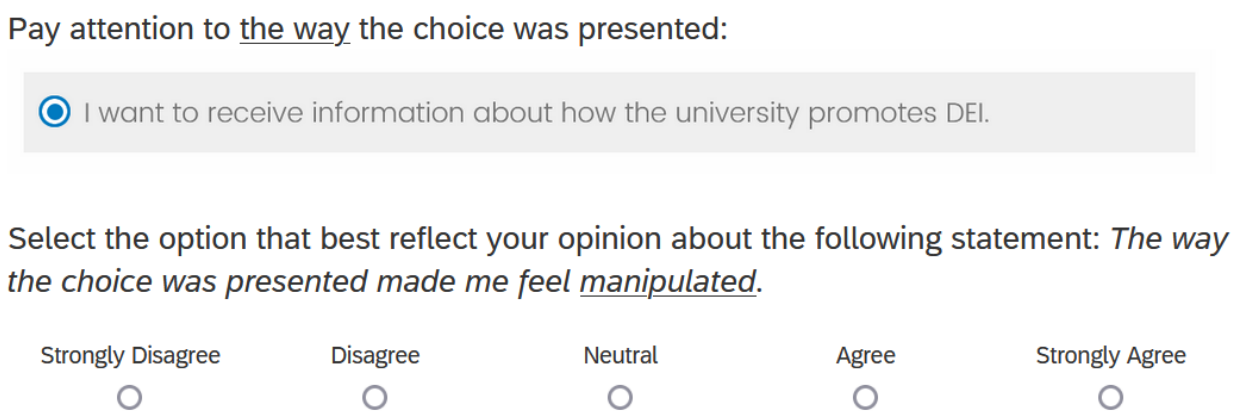


Figure 9

Prosocial Choice across Nudge Groups (Study 1)

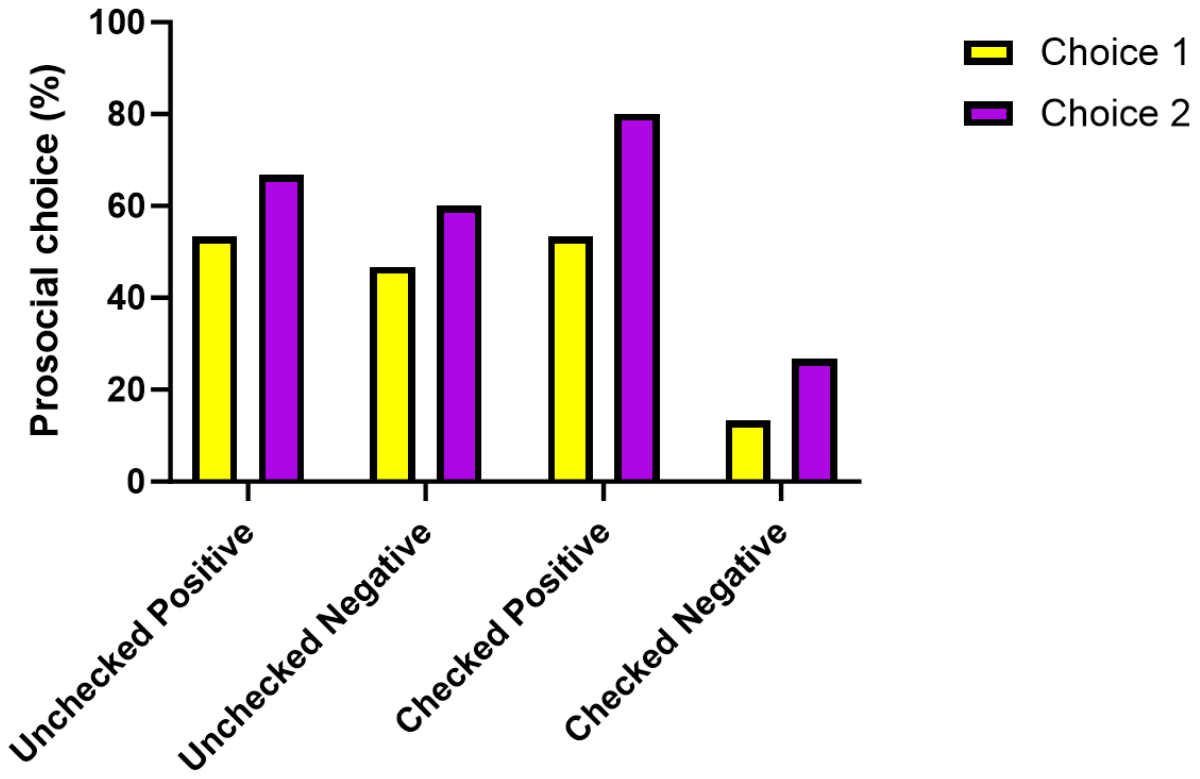
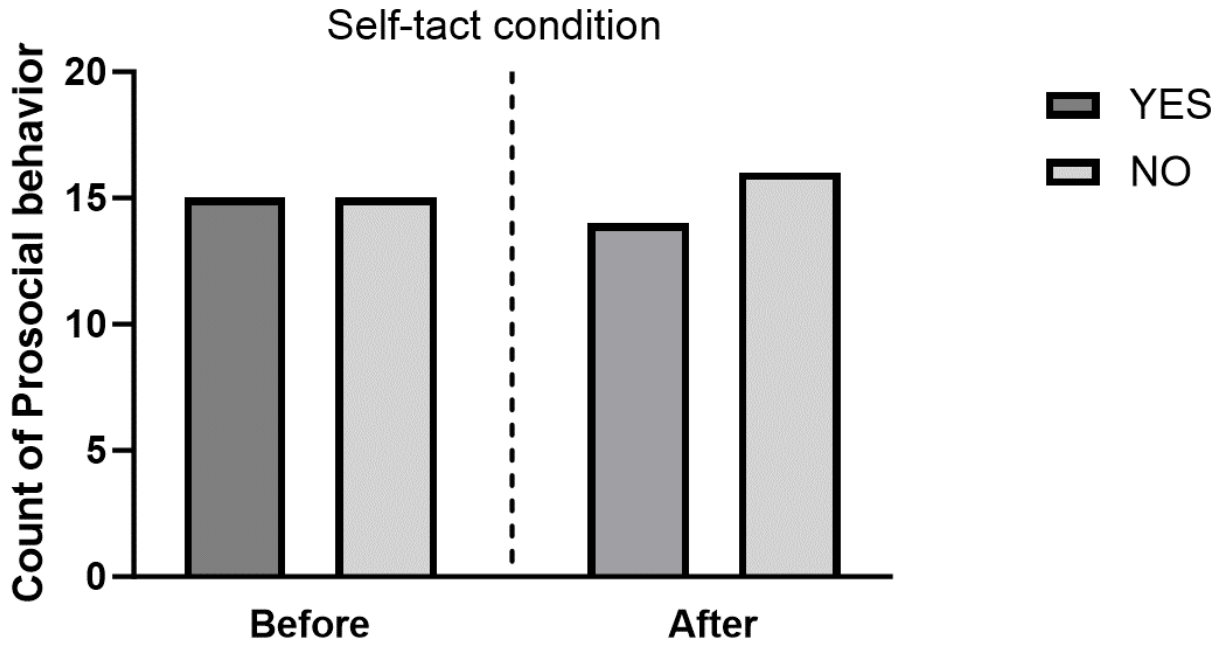


Figure 10

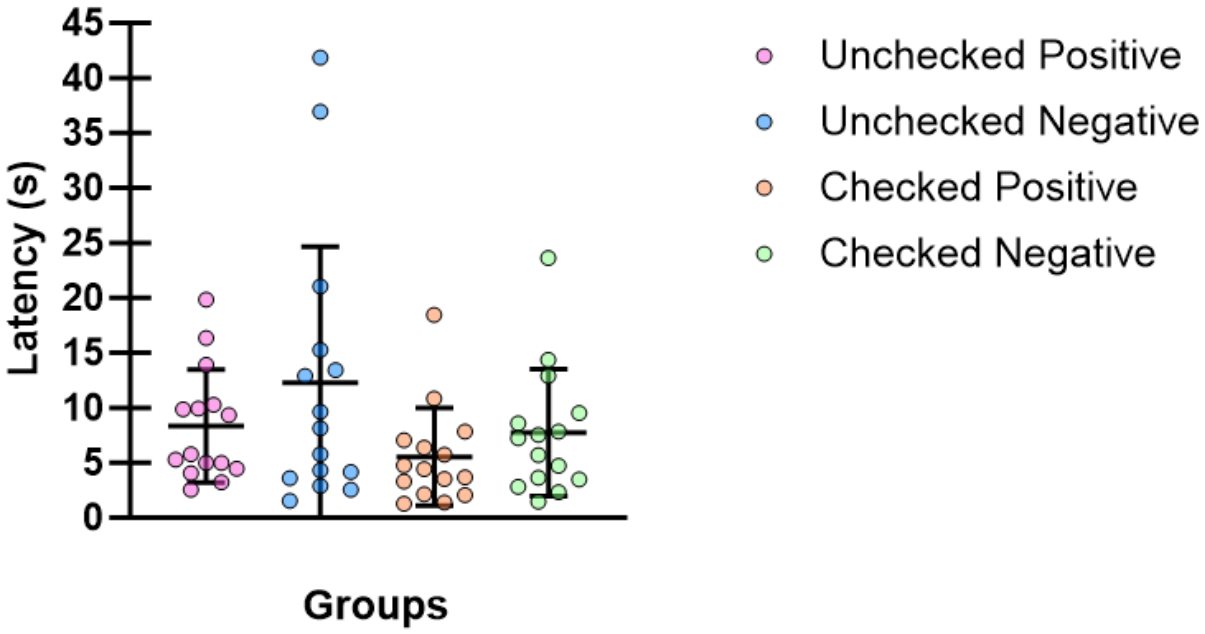
Prosocial Behavior on Self-Tact Group (Study 1)



Note. Left y-axis and bars correspond to count of presence (“yes”) or absence ("no”) of prosocial choice across Choices 1 and 2.

Figure 11

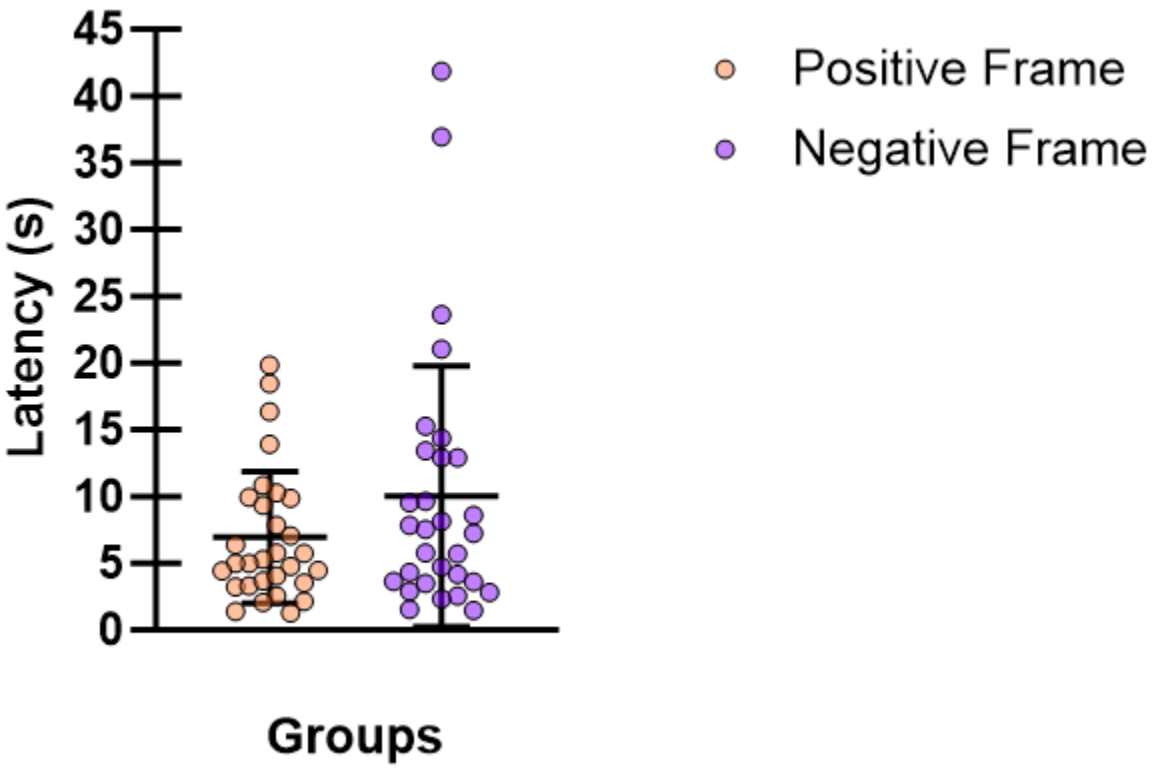
Latency to Click "Submit" for all Groups and Participants (Study 1)



Note. Unchecked Positive mean: 8.34 s (SD=5.13, SE=1.33); Unchecked Negative mean: 12.29 s (SD=12.36, SE=3.20); Checked Positive mean: 5.54 s (SD=4.45, SE=1.15); Checked Negative mean: 7.73 s (SD=5.79, SE=1.50).

Figure 12

Latency to Click "Submit" for Positive and Negative Frame Groups (Study 1)



Note. Positive frame group mean: 6.94 s (SD=4.93, SE=0.90), Negative frame group mean: 10.01 s (SD=9.77, SE=1.78).

Figure 13

Recall of Past Choice (Study 1)

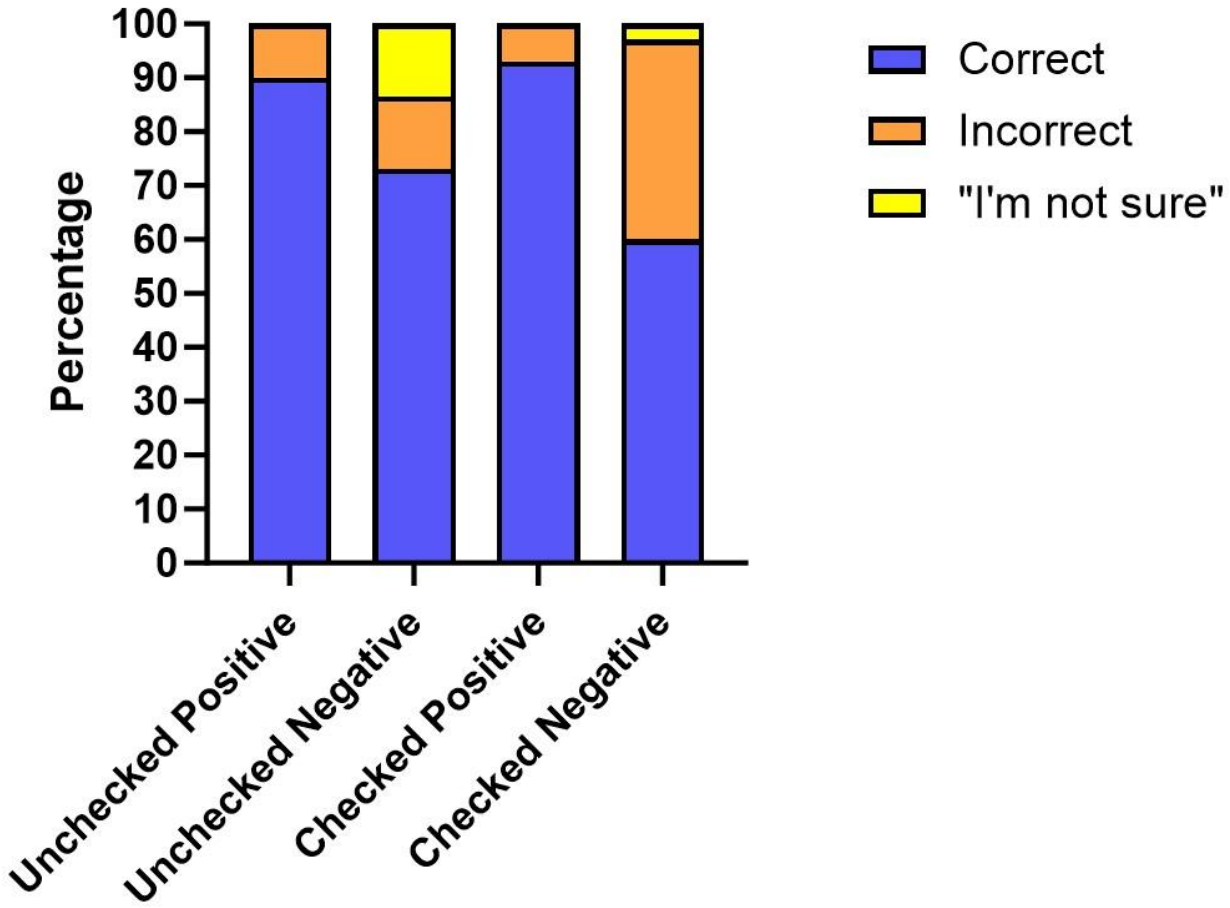


Figure 14

Social Validity of Choice Presentation (Study 1)

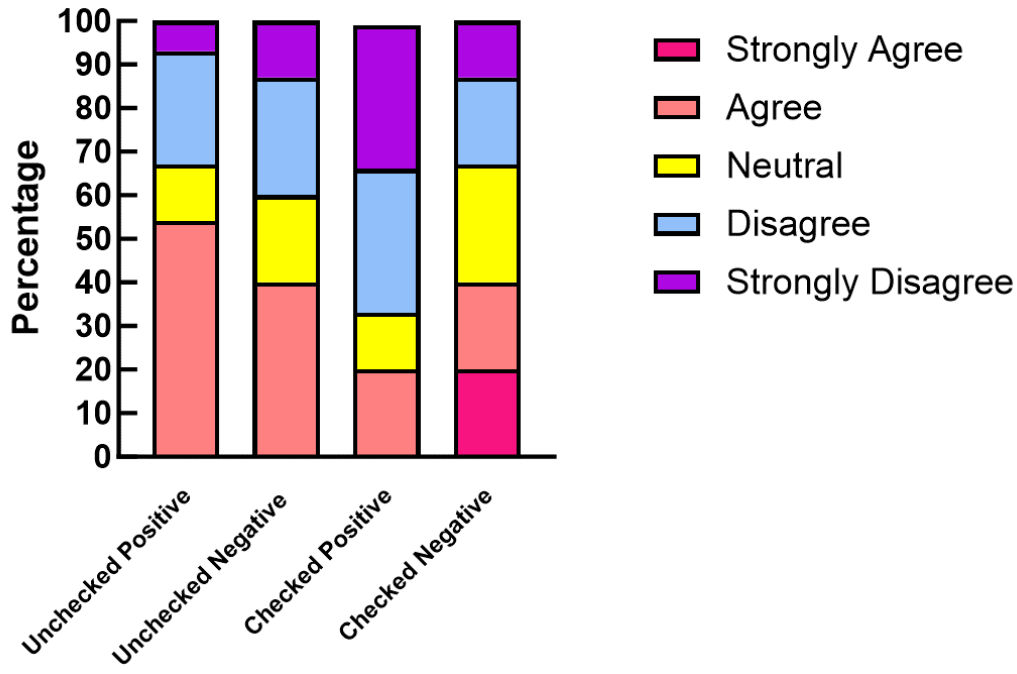


Figure 15

Prosocial Choice (Study 2)

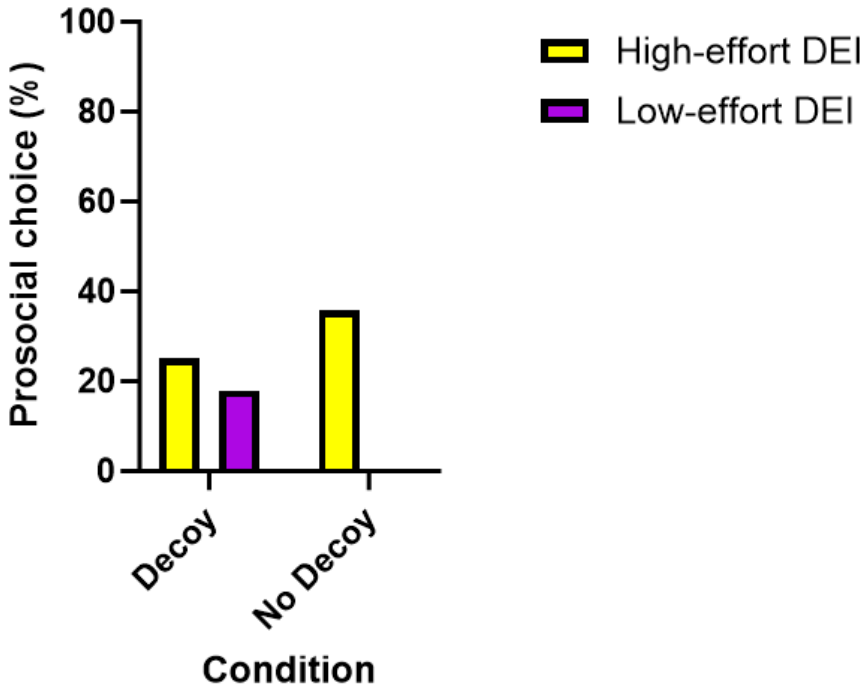


Figure 16

Recall of Past Choice (Study 2)

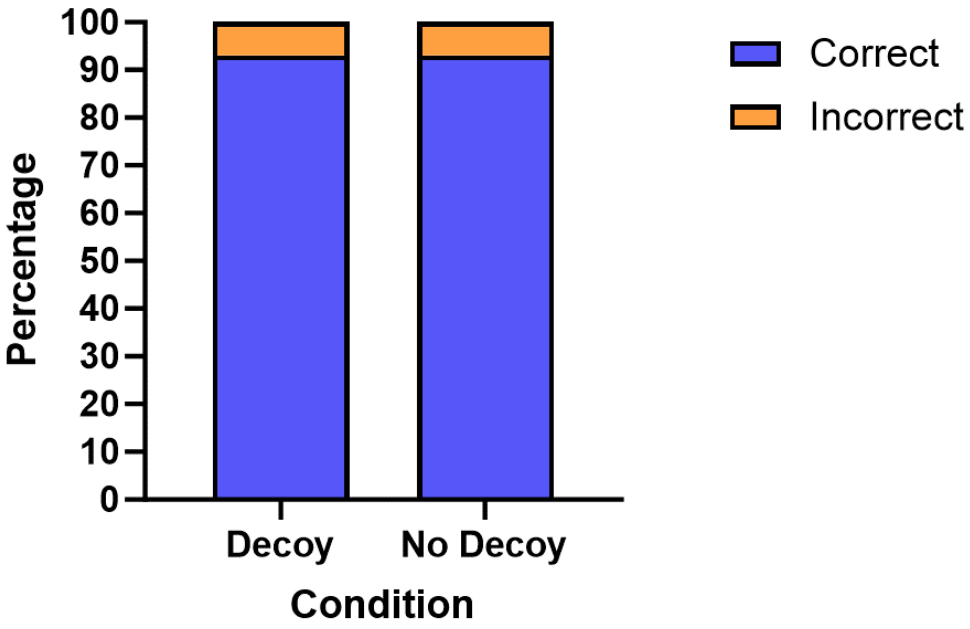


Figure 17

Social Validity of Choice Presentation (Study 2)

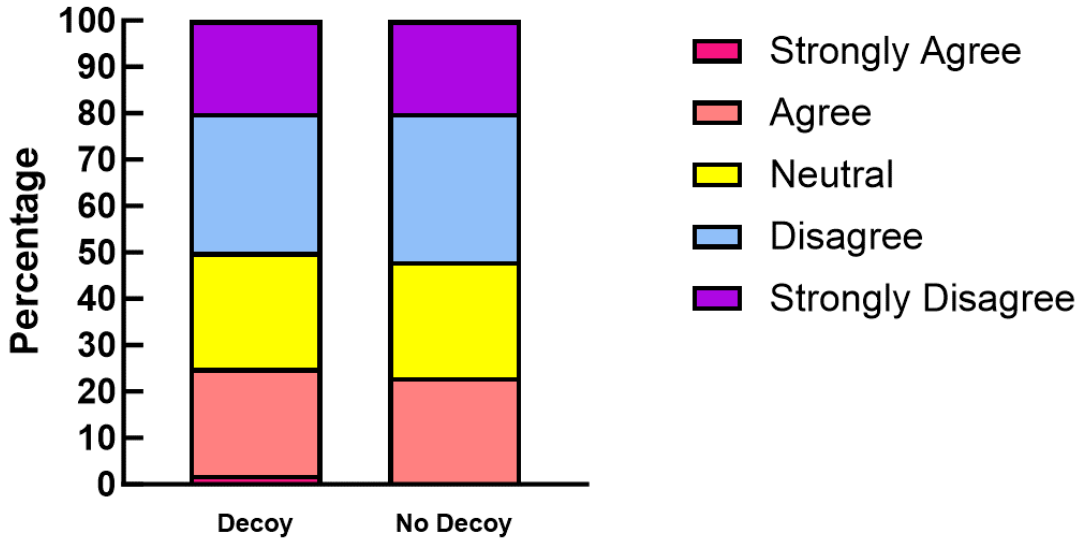


Table 1

Within-Subject Design Conditions (Study 1)

Number	Description	Statement
1	Choice 1	Participants will be randomly assigned to visualize one of the four options: • Positive framing with unchecked box: ☐ I want to receive information about *_____ • Negative framing with unchecked box: ☐ I DO NOT want to receive information about _____ • Positve framing with checked box: ☑ I want to receive information about _____ • Negative framing with checked box: ☑ I DO NOT want to receive information about _____ * how the university promotes DEI OR *how I can promote DEI
2	Self-tact of identities	Which of the following minority/underserved/marginalized/underrepresented group are you part of? (choose as many as you like) – see Figure 2.
3	Choice 2	Same as condition 1 *If the participant visualized "the university promotes" in Choice 1, for Choice 2 the participant would see "I can promote", and vice-versa.

Table 2

Participants' Demographic Information (Study 1)

Category	*N*	%	Category	*N*	%
Age Range			***Race/Ethnicity***		
18-24	51	85	White	39	65
25-34	6	10	Asian/Pacific Islander	5	8.3
35-44	2	3.3	Hispanic/Latinx	4	6.7
Prefer not to answer	1	1.7	Hispanic/Latinx/White	3	5
			Multiracial	2	3.3
Gender Identity			Black/African American/Other	2	3.3
Female	51	85	Black/African American	1	1.68
Male	6	10	Multiracial/White	1	1.68
Female/No labels	1	1.66	Hispanic/Latinx/Multiracial	1	1.68
Male/No labels	1	1.66	Asian/Pacific Islander/White	1	1.68
Prefer not to answer	1	1.66	PNA	1	1.68
Sexual Orientation			***Language***		
Straight	46	76.7	EFL	46	76.7
Bisexual	4	6	EFL+	3	5
Asexual	2	3.3	Non-EFL Spanish	3	5
No labels	2	3.3	Non-EFL Vietnamese+	2	3.3
Gay	1	1.6	EFL+ Spanish	1	1.66
Lesbian	1	1.6	EFL+ Korean	1	1.66
Bi/Pansexual/Questioning	1	1.6	Non-EFL Amharic	1	1.66
Pansexual	1	1.6	Non-EFL Haitian/Creole	1	1.66
Questioning	1	1.6	Non-EFL Urdu/Punjabi/Hindi	1	1.66
PNA	1	1.6	PNA	1	1.66

Note. EFL = English as a first language; Non-EFL = English is not first language; + = Bilingual or multilingual.

Table 3

Reported Rationale for Decision Making (Study 1)

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
1	Yes	*I think this directly relates to my well-being as well as other people in my community who are going to KU, so it's very important to know.*	No	*As a foreign student from a developing country, I am interested in learning how I can help people like me thrive in oppressive environments.*
2	Yes	*I think there is limited DEI information readily available for students so I wanted to learn more.*	Yes	*Being part of marginalized groups and being friends with others in certain groups influenced me to want to promote DEI myself.*
3	No	*I would like to see how the university handles DEI and learn more to advocate for DEI*	Yes	*I am a person of olor and I would live to promote and learn more of DEI*
4	No	*Being a women of color, how the university I'm attending promotes DEI is something that I would like more information on.*	Yes	*I'm a women of color, so promoting DEI is kind of second nature and not something I'm seeking information on.*
5	Yes	*I wanted to learn more about how the university works in general and how they try to help students.*	Yes	*I chose to learn how I can promote DEI because I myself am not hugely underrepresented or overlooked. I want to be able to help others who may feel that they are not represented in general.*
6	No	*KU promotes DEI openly so I would choose to learn more about it based on my beliefs about promoting DEI aligning with the campus's.*	No	*I would definitely be more open as to how I can personally promote DEI, so I would choose to learn more about that.*
7	Yes	*As someone who supports promotion of DEI, it didn't really take much thought into choosing the "yes" answer.*	Yes	*As someone who supports promotion of DEI, it didn't really take much thought into choosing the "yes" answer.*
8	No	*I find reading the emails that can inform me on important topics, especially fields I'm interested in gives me something to do in my free time.*	Yes	*I said no because when I would click yes it wasn't allowing me to select it.*
9	Yes	*I would like to be proactive in my college community and I think that participation and learning more is a great way to pursue these goals.*	Yes	*I enjoy attending the DEIB meetings occasionally and learning more about how we can make KU more inclusive. For these reasons, I opted in to learn more.*
10	Yes	*I don't know what DEI is, so I'd like to learn more.*	Yes	*At this point I'm not completely sure what DEI is, however, once I learn more about it I would be interested in learning more about what I can do to promote it if it's something I believe in.*
11	Yes	*I personally dont see a lot around campus about DEI information on campus*	Yes	*I feel that having an understand of DEI on my campus is important and which is why I want to know more*
12	No	*I felt like it could help my community*	Yes	*I felt like it was the right choice for me to choose*
13	No	*I would like to see how the university promotes it because I feel as though I haven't seen too much promotion of it.*	Yes	*I just went off auto pilot clicking no because I thought of it as spam emails. I can promote DEI by for every individuals feedback and*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
				hearing all of it. Also by asking people to be apart of experiences.
14	Yes	*I want to learn more about how our campus promotes DEI and what they do specifically.*	Yes	*Because I want to make a difference and knowing how I can make other students aware of DEI topics that affect students on campus.*
15	Yes	*My reasoning kind of mirrors the answer above. I think staying educated and open to learning different ways I can help is only a positive*	Yes	*I just thought about how it is better to be educated and aware of how I can help than to not ever be open to helping. I always like to be informed about what's going on and ways I can help.*
16	Yes	*I haven't heard about dei on campus very mucj*	Yes	*I want to be better informed*
17	Yes	*I was interested in how the University is planning on to promote DEI*	Yes	*I don't know a ton about DEI so I thought it would be good to learn more about it.*
18	Yes	*I'm not sure how the university promotes DEI, and I would like to know what the initiatives in doing so are, as well as specific actions that the university has already taken and how effective they have been.*	Yes	*I am currently a special education teacher and I am studying to become a BCBA, so I feel like learning more about what I personally can do to promote DEI will help me better serve my community.*
19	Yes	*I'm curious to see KU's goals and action and see how impactful and truthful those statements are.*	Yes	*I'm always open to growth and broading my understanding about inclusion. I strive to create an open and welcoming environment for everyone and want to learn how to further do so to help me later in my career and life.*
20	Yes	*I was only offered one option to this question. I would have still said that I was interested in learning more about how the university promotes DEI because I havent really been educated on how they do that.*	Yes	*Same thing as before, I was only presented with the option that I would be interested in learning more. I still would have picked this though because I think there is always room for improvement on how people can promote DEI.*
21	Yes	*Learning how lets me recognize them around me and promote an influence to take part*	Yes	*I think it is an important skill that is important to have moving forward for others and ones self*
22	Yes	*I would like to see how the university creates a melting pot of all races and cultures come together.*	Yes	*I would like to see a melting pot of all races and cultures come together all around the world.*
23	Yes	*I already received information about DEI from the university, Greek life, and the department that I am part of. I'm not sure if I could get more information about DEI, but if I could, I would choose to do so to see what opportunities are available through the University.*	Yes	*I would like to learn about how I can be more involved in DEI at KU and see what I could do as a student to better the DEI resources on campus*
24	Yes	*I don't remember if I chose yes or no here but probably I was alright receiving this information. I think it's comforting to see a big organization do something rather than feel like only a few people care about this matter.*	No	*I chose not to receive information because I feel like as an individual there is only so much I can do. I am already involved in some initiatives that I know I can greatly have an effect*
25	No	*I did not want to get spammed with emails.*	No	*I did not want to get spammed with emails.*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
26	No	*I have a lot of emails that come in and sometimes my inbox gets overloaded.*	Yes	*I have a lot of emails that come in and sometimes my inbox gets overloaded.*
27	No	*I didn't want unnecessary emails, etc. normally when a question like that pops up I assume it comes along with promotional stuff.*	No	*This was the same. I also felt that I already knew how*
28	No	*Same answer. I don't want more emails in my school inbox*	No	*I didn't want to receive emails following this activity*
29	No	*I was thinking about how I already get emails about DEI, and not to mention I already feel like that KU does a good job of fulfilling DEI so I did not feel like I need to learn about how they promote it.*	No	*Though I appreciate the goal of DEI, I did not see how I could promote DEI, nor did I feel like I would ever be motivated to participate in any promoting.*
30	Yes	*I am about to graduate and won't be involved with KU in the same capacity. My email is already flooded with emails I don't read. I am making an effort to organize and down size in that are.*	Yes	*I thought the survey reset and it was the same question. Often on these programs, the brain sees the repetitive screen, motion, and initial request. I honestly thought it was the previous answer about receiving information from the university. I would actually like information about how to promote DEI initiatives so I can utilize it in my school.*
31	No	*I feel like we get a lot of emails and information already on how the university promotes DEI. Plus, if I am not wrong, each major must take a DEI course, so I have a pretty good idea on how the university promotes DEI.*	No	*I have taken a DEI course for my major and am quite involved in the community. I did not think I needed more ways for me to promote DEI, but it could not hurt to learn more.*
32	No	*I am graduating and I am moving to another country so I know that I will not be in the university to promote it.*	No	*I really not interested because I am not of tis country, so I know that in the future I may not needed.*
33	No	*I feel as if I already receive enough information about that specific topic from KU.*	No	*I feel as if I already do that daily. I believe the topic is important and I do my best with all of my friends and colleagues.*
34	No	*I get information about DEI opportunities and resources during our sorority chapter.*	No	*Genuinely, I read both questions about DEI as "Would you like to receive information". I am involved in a sorority and every week at the chapter we are provided with resources of how we can get involved in promoting DEI.*
35	No	*I chose to not learn how the university promotes DEI as I am a senior and I do not feel that it would be helpful for me to learn how the university promotes DEI as I am graduating.*	No	*I chose to not learn how I can promote DEI because I am in a sorority and we do workshops on how to promote DEI and have held meetings about DEI. I feel that I have already learned a lot about how to promote DEI.*
36	No	*I have learned about DEI through other presentations*	No	*I have learned through other events*
37	No	*This topic is not related to me that much*	No	*I'm not interested in promoting DEI.*
38	No	*I know already how the university promotes it*	No	*I know ways through my clubs to do that*
39	No	*I work in a KU office in which I have been trained in the university's DEI initiatives.*	No	*I misread the question and thought it was asking about learning more*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
				about how the university promotes DEI.
40	No	*I learned a lot about DEI through my sorority and some classes through KU with guest speakers and groups, so I felt it wasn't necessary to be exposed to more.*	No	*I learned to promote DEI with help from my sorority bringing in multiple guest speakers and advocating groups where I have learned multiple tactics I feel would work best.*
41	Yes	*I don't feel like our university needs to do more, it's pretty diverse in its clubs and Greek affiliations*	Yes	*I didn't really mind much about how I can personally promote DEI*
42	No	*DEI is a political ideology and it is nonsense. It in fact INCREASES racism and discrimination, etc.*	No	*DEI is a political ideology and it is nonsense. It in fact INCREASES racism and discrimination, etc*
43	No	*I feel like I've heard enough speeches and seen enough informational fliers.*	Yes	*I feel like I don't promote it enough, and would love to learn how I could do more.*
44	Yes	*The fact that is states "do you want to know" info on DEI. I feel like most people would click yes because it is a mindful that that is important on a college campus.*	Yes	*I think the word is symbolizes, what can I do to improve something! I hope many people would click this because we always want to improve things.*
45	No	*I chose to not receive information about how the university promotes DEI because if I choose to educate myself, I will do so on my own.*	No	*I chose to not receive information about how I could promote DEI because I do not know enough about the topic to promote it*
46	No	*When someone asks how a university promotes Diversity, Equity, and Inclusion (DEI), I think about what DEI means—like making sure everyone feels valued and included. For example, the university might have clubs for different cultures or backgrounds, or they could offer scholarships to help students from diverse backgrounds. I'd explain these things in a clear way, focusing on what the university does to make everyone feel welcome and supported.*	No	*Promoting Diversity, Equity, and Inclusion (DEI) at a university involves various simple actions. These include educating people about diversity and fairness, making fair rules and policies, and ensuring that everyone feels heard and respected. It also means showing diversity in leadership roles and what's taught in classes. Providing support services like counseling and mentorship helps create an inclusive environment. Bringing in a diverse mix of students and staff, and ensuring that everyone can easily access resources, are important steps too. Working with local communities, regularly assessing progress, and always striving to improve are essential aspects of promoting DEI.*
47	Yes	*I don't remember what I put for this question, but I do know that KUs faculty, staff and students have multiple opportunities to engage in community DEI initiatives, committees and organizations on campus.*	Yes	*I believe that educating myself on promoting DEI can only make this university more inclusive and comfortable for each and every student here.*
48	No	*I must have misread the question because I thought I was answering the same question twice.*	Yes	*I thought that the question said that I had to click "receive info about KU DEI"*
49	No	*Something that influences my choice was thinking back to my own personal experience with DEI from my community.*	No	*One thing the influence my choice was organizations that I am already involved in, time constraints.*
50	Yes	*Similar to the above question, I am curious about what the university-specific information was, and left the box unchecked*	Yes	*Since the question indicated that you checked the box to opt out of receiving information on how I can*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
		thinking it might take me to a page supplying that information.		*promote DEI, I left the box unchecked assuming that an unchecked box opted me in. I was curious if that information was unique to this study and wanted to see if leaving the box unchecked would take me to a page with that information.*
51	No	*I think I chose to learn more about it; I chose it because I was unsure if I initially chose the right answer chose and wanted to continue forward with the survey.*	Yes	*I think I chose to not learn more about it; Not because I didn't want to, but because I did not want to be spammed with emails.*
52	No	*I'm not sure how they would contact me about the way Ku promotes DEI. I also have never seen a significant promotion of DEI on campus or campus websites.*	No	*I think what influenced y choice was the all the encouragement of promotion of DEI on social media. I think social media is very saturated (in my opinion) when it comes to promoting diversity, equity, and inclusion. I see so much of it and have learned a lot myself.*
53	No	*The social status of therapist/clinical psychologist in U.S. Other people's recommandation.*	No	*N/A*
54	No	*I also did the same thing as the first question. I had to think about what I saw bolded and underlined and tried to picture it.*	No	*I had to think about what words I saw bolded and when I remembered, I tried to picture it in my head.*
55	No	*I don't remember*	No	*I don't remember*
56	No	*There was no option to answer otherwise in the survey.*	No	*As above, there was only one option available.*
57	Yes	*Since the university has so much power in how funds are distributed and how spaces are created, I think it's important to keep the school accountable with how they are keeping diversity in mind when making decisions/running the school. So that is why I made the choice I did.*	Yes	*Even though I am not a part of a marginalized minority community, I still think it's important to promote an environment that is welcoming to those who are. therefore, this is the thinking that prompted me to click yes as it is a topic that is important to me.*
58	No	*DEI is an important factor in the university to ensure the happiness and wellbeing of all*	No	*DEI is an important factor in the university to ensure the happiness and wellbeing of all*
59	No	*Trying to the work and implement changes in the Jayhawk Community cannot be done alone without the support of authority and the University can provide that authority.*	Yes	*I believe I chose to select this choice was because I am a person of color and a minority, so learning about how I can promote an organization with the initiative to provide resources, opportunities, and support for that community is highly valuable for me.*
60	Yes	*There was only one option to choose I believe. I did not look much at the question, or really even consider it I just clicked it.*	Yes	*There was only one option to choose I believe. I did not look much at the question, or really even consider it I just clicked it.*

Table 4

Participants' Demographic Information (Study 2)

Category	*N*	%	Category	*N*	%
Age Range			***Race/Ethnicity***		
18-24	54	96.4	White	40	71.4
25-34	2	3.6	Hispanic/Latinx	5	8.9
			Hispanic/Latinx/White	4	7.1
Gender Identity			Black/African American/Other	2	3.6
Female	49	87.5	Black/African American	2	3.6
Male	2	3.6	Asian/Pacific Islander	2	3.6
Female/Queer	2	3.6	Other	1	1.8
Female/Gender fluid	1	1.76			
Female/No labels	1	1.76	***Language***		
Male/Other	1	1.76	EFL	45	80.4
			EFL+	3	5.4
Sexual Orientation			EFL+ Spanish	2	3.6
Straight	40	71.4	EFL+ Vietnamese	1	2.43
Asexual	7	12.5	EFL+ Somali	1	2.43
Bisexual	4	7.1	Non-EFL Spanish	1	2.43
Bisexual/Other	1	1.8	Non-EFL Polish	1	2.43
Queer/No labels	1	1.8	Non-EFL Vietnamese	1	2.43
Gay	1	1.8	Not reported+	1	2.43
Lesbian	1	1.8			
Straight/Questioning	1	1.8			

Note. EFL = English as a first language; Non-EFL = English is not first language; + = Bilingual or multilingual.

Table 5

Reported Rationale for Decision Making (Study 2)

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
1	No	*I usually choose to not let organizations send me information. Most organizations send out notifications too much and I end up muting their notifications.*	No	*Same answer as before, I usually choose to not let people reach out to me. Another reason is because I'm super bad at answering or reading texts sometimes if I don't recognize the name or number. Emails that I don't recognize remain unopened*
2	No	*I just didn't want to get more notifications. If I'm being totally honest, I probably wouldn't have read the messages anyways.*	No	*I didn't want to receive information that I knew I wasn't going to read or even look at.*
3	No	*Im unsure what it is to begin with so receiving information and how to spread awareness didn't influence me enough to choose yes.*	No	*I also am unsure what that means and I don't want to promote something I don't know*
4	No	*I do not want to receive information about DEI initiatives as it does not influence my life and or doe snot relate to what i am studying for my future career.*	No	*I do not want to receive information about DEI initiatives as it does not influence my life and or doe snot relate to what i am studying for my future career.*
5	No	*Honestly the same answer here as it was above, I didn't really think too much of the options being presented to me but all I knew is I most likely wasn't going to be looking at the communication method that they were sending me the information on.*	No	*I chose to not receive information about DEI initiatives because usually that just involves a lot of spam emails and I don't typically check my emails all that often, so sending that information to me just seemed like it would be a complete waste of time in my opinion.*
6	No	*I didn't want to receive information because I know a lot about the those things because I'm a part of those communities that it would be informing me about*	No	*I didn't want to receive information just because I already know a lot about the those things because I'm a part of those communities that it would be informing me about. I don't have an interest in formally promoting things but I will talk about those things in casual conversation.*
7	No	*I didn't know what it was or understand it well so I didn't understand what the question was asking.*	No	*I didn't know what it was or understand it well so I didn't understand what the question was asking.*
8	No	*I did not want to receive info*	No	*I did not want to receive info*
9	No	*I have seen thedifferent emails and incentives that have been shown to me from the DEI program within my majoir and I felt that signing up to recieve more will just then turn into more spam.*	No	*I chose not to recieve information about the programs within the university. I chose this becuase I am already on a mailing list somehow for one of the DEI programs within my major and I see that no matter what they do it will immeadiately go into my spam folder and I miss and then ignore the message.*
10	No	*I only want spam mail as I already have.*	No	*Again, I get many emails about random things and I do not need any more spam emails.*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
11	No	*I chose not to receive any information about DEI initiatives because I already have many emails and other things to manage. I simply won't be able to properly advocate.*	No	*I chose not to receive any information about DEI initiatives because I already have many emails and other things to manage. I simply won't be able to properly advocate.*
12	No	*I do not want initiatives because I dont know much about them*	No	*I do not want initiatives because I dont know muh about them*
13	Yes	*I felt as though I alone won't make a difference so there's no point in me learning how to help and identify DEI initiatives if I can't help.*	No	*I honesty felt bad so I was hoping to get another chance to get info since I couldn't go back.*
14	No	*I feel like I know and am aware of a lot of the DEI resources on campus, so I felt like I didn't need anymore.*	No	*I feel like I know and am aware of a lot of the DEI resources on campus, so I felt like I didn't need anymore.*
15	No	*I didn't want to receive any other emails from the university that would clutter my in box, i feel like I wouldnt do anything with the information.*	No	*I am not a fan of getting a lot of notifications because it overwhelms me in every day life, as bad as it sounds I dont really feel like I would do anything with the information that would have been provided to me, and i just didnt want to get another random email from the university.*
16	No	*I felt bad so I decided to get info about DEI*	Yes	*I didn't want info because I didn't want to receive more emails. I feel as I already get enough emails*
17	Yes	*With the simple yes or no question, I chose no since it is the easier option*	No	*I chose to receive information since I realized there is no harm and I don't have to do anything with it since there was the option on how to promote it as well*
18	No	*I clicked not to receive information about DEI initiatives because I wimping just didn't want a bunch of emails or texts coming in my inbox. Nothing influenced it besides that the topic is interesting I just would never follow up most likely with emails and such.*	No	*I clicked not to receive information about DEI initiatives because I wimping just didn't want a bunch of emails or texts coming in my inbox. Nothing influenced it besides that the topic is interesting I just would never follow up most likely with emails and such.*
19	Yes	*I didn't want to receive information because I didn't understand what it all included*	No	*My decision was to receive information and learn how to promote it because after the first question I chose not to and I felt bad.*
20	No	*I choose not to receive information about DEI initiatives because I prefer to focus my attention and energy on other areas that I find personally fulfilling or relevant to my interests and goals. I believe in respecting diversity, equity, and inclusion, but I choose to engage with those principles in different ways that align more closely with my values and priorities.*	No	*I choose not to receive information about DEI initiatives because I believe that while they are important, I am currently focusing my efforts on other areas where I feel I can make a more direct and meaningful impact. I support diversity, equity, and inclusion in principle, but I have chosen to prioritize my involvement in different causes or initiatives that align more closely with my personal values and goals at this time.*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
21	No	*I decided not to receive information about DEI initiatives but after thinking about it I change my answers, I think it is important for students to receive information about DEI initiatives because many of us aren't thinking about this topic and receiving emails would catch students eyes and lead them to reading emails about this.*	No	*For this question I decided not to receive information about the topic, but also changed my mind. Like I mentioned in the previous question I think it is important for students to receive information about this topic so they become more aware of it and the different resources available. I think it would be helpful in receiving information about this because I don't think many students think about this on their own, and if they do they may not know what resources or information is available because they don't know how to find it.*
22	No	*I think about receiving more mail and information like a subscription that I won't read.*	No	*The same as the above. I definitely had to think harder into it though considering the choices seemed like less responsibility than just having the two.*
23	No	*The fact that I'm an off-campus student and are only on campus for classes only. I am an adult learner, so I feel like I would be out of the age range for all those that would attend any events or get togethers for these DEI initiatives.*	No	*I choose not to receive information for DEI initiatives, not because I'm against it, but because I'm not a on-campus student and therefore, I am only on-campus when I have classes. This information serves no purpose to me, as I am a off-campus student and also, live off campus, thus these resources aren't in my best interest.*
24	No	*I am graduating and will no longer be actively participating in campus activities or initiatives*	No	*I am graduating and will no longer be actively participating in campus activities or initiatives*
25	No	*Similar to the above, I feel as if I have enough background information on the topic and do not want to learn more.*	No	*I am not interested in learning about DEI initiatives as I feel as if I already have enough resources and a detailed amount of background information on the subject. I do not feel like I could promote this subject.*
26	No	*I already have a lot going on and I didn't want anymore emails coming through that I probably wouldn't read.*	No	*While it sounds like a good thing to receive, I did not want another thing coming through my email that I wasn't going to look at.*
27	No	*In my sorority we have a DEI Chair that provides us with plenty of information and resources!*	No	*I had the same answer for the same reason, I already have all the DEI resources I need.*
28	No	*I chose to not receive information about DEI initiatives. I have a lot of informational events and programs already being promoted in my KU email. I believe that having too many informational initiatives is too overwhelming for students who already have a lot on their plate.*	No	*I chose not to receive information about DEI initiative, or to receive information and learn how to promote it. I did this because I already have a lot on my plate and although I am interested about DEI I don't think it would be beneficial for me to learn how to promote it.*
29	No	*I already know a good amount on the topic, and I do not need extra information.*	No	*I already know a good amount on the topic, and I feel like I do not need any more information.*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
30	No	*i don't want anymore emails than i already have*	No	*i relooked since there was 3 options but still chose no*
31	No	*not having emails*	No	*the options*
32	No	*I don't know much about DEI initiatives so I wouldn't be very resourceful to the promotion of it*	No	*If I receive something about DEI initiatives I will probably never find it much like anything else I am sent.*
33	No	*I chose not to receive DEI initiatives because as a black woman I am proud that it is talked about and acted on but my participation is not needed in these types of initiatives.*	No	*I chose not to because I, again as a black woman, don't believe that it is my responsibility to promote these things when I and my ancestors have been fighting for inclusion for years. It is time for those that have not been oppressed against to promote the initiatives and make the change within their own organizations. We as a community and country are already aware of what inclusion means, and the "diversity hire" or black student athlete shouldn't have to continue to promote their own valid inclusion through initiatives.* *In fewer words. Initiatives are for those that lack diversity and inclusion. Not for those that have been fighting for it for many years.*
34	No	*I chose not to receive information about DEI initiatives because I have taken many courses related to DEI so I feel like I already have a good understanding about DEI initiatives.*	No	*I chose not to receive information about DEI initiatives or learning how to promote it because I have taken many courses related to DEI so I feel like I already have a good understanding about DEI initiatives and how I can promote it within my day-to-day life.*
35	No	*me personally i dont have a easy time checking m notifications and messages, so reciving information about dei initiatives wouldnt be helpful for me.*	No	*me personally i dont have a easy time checking m notifications and messages, so reciving information about dei initiatives wouldnt be helpful for me.*
36	Yes	*If I were to receive information about DEI initiatives, I could better myself as a person by understanding how to promote DEI in my own community.*	Yes	*As a Latina surrounded by people of various cultures and backgrounds, I believe it's important to stay informed, promote, and learn how to take Diversity, Equality, and Inclusion initiatives to ensure that others feel safe and welcomed wherever they go.*
37	Yes	*What influenced my choice was because I feel as if I am very involved and engaged in DEI as I am a person of color.*	Yes	*I care deeply about DEI as it has helped me and others that I know so I was not hesitant to receive information AND learn how to promote it.*
38	Yes	*i thought about my experience being a muslim student at a majority white school and how helpful it would've been to see initiatives.*	Yes	*I decided which I thought would be the most beneficial.*
39	Yes	*I feel as if it's important to learn about DEI initiatives, especially in our local community; therefore, I chose the answer to receive information about DEI initiatives.*	Yes	*Once again, I believe it's very important in our society to learn about DEI initiatives and promote them accordingly because it is the only way to spread the information. Because I*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
				value the importance of DEI, I chose the option to receive information about DEI and how to promote it.
40	Yes	*I chose the same answer as I wanted my answers to match.*	Yes	*I chose to receive information because there's nothing wrong with gaining new information about a topic you don't know very well.*
41	Yes	*I decided for this question that I would want to learn more about DEI initiatives because the more I thought about the aspect of it all, the more I realized the importance behind it.*	No	*I decided for this question that I would not want to learn more about DEI initiatives because I didn't feel as if the question was important or related to me in any way.*
42	Yes	*My studies in psychology and sociology have prompted my interest in identities within marginalized communities. The DEI knowledge I have gained through my college career is knowledge I feel should have been introduced much earlier within my life. At any rate, I believe the value of these initiatives is very important to create communities of acceptance and proper education. If everyone had DEI initiatives readily accessible to them, I think the world would be a much better place!*	Yes	*I think DEI initiatives should be celebrated. There is always more to learn about identities that are different from ones own. I want to learn more about and celebrate identities of marginalized communities to uplift them and promote more equitable spaces for the future. I think loving others is what it is all about!*
43	Yes	*I chose to receive information because I think it would be useful to understand more in depth about DEI and what it does/what it is about. I do not know very much about this topic so it would be nice to understand a little better.*	Yes	*I chose that option because I think everyone should be educated on DEI and what to do to make your support known. It never hurts to learn more about certain topics and how they affect others around you.*
44	Yes	*I just want to know more.*	Yes	*I chose the receive option because I believe it is important.*
45	Yes	*I was raised to love and accept everyone and I see no reason not to want to learn more about how to be accepting and celebrate everyone*	Yes	*I was raised to love and accept everyone and I see no reason not to want to learn more about how to be accepting and celebrate everyone*
46	Yes	*I decided to receive information about DEI initiatives. I choose this because again, I believe that it is important to know and for others to know about.*	Yes	*I decided to receive information about DEI initiatives or to receive information and learn how to promote it. What influenced my choice is that I believe is is important to know about.*
47	Yes	*There were more options for me to choose from.*	No	*I did not want to learn how to promote it. There were few options, so I opted out of it completely.*
48	Yes	*I want to receive more information to spread awareness and to teach myself more on how to help*	Yes	*I am Mexican and want to promote diversity. I also want to learn how to teach others how to be more inclusive. Lastly I want to just have more of a general knowledge about DEI initiatives.*
49	Yes	*I am a Hispanic woman and a first generation in my family to go to college so my ethnic background and cultural identity draw me closer to organizations, events, that promote diversity. It can feel hard to feel as if I*	Yes	*My answer to this question is much similar to my written response for the previous question. I believe I'm just a little hesitant on the "learning how to promote it". While I embrace diversity, I think I have knowledge to promote it*

No.	Prosocial Choice 1	Rationale 1	Prosocial Choice 2	Rationale 2
		belong so knowing the school cares to give DEI initiatives can be comforting.		*without having to take a course or school like lecture that teaches me how to.*
50	Yes	*I would rather want to learn more about something I don't know much of than to not learn anything.*	Yes	*I would like to learn more about it first than learn how to promote it because if I end up deciding it's not something I want to promote always I learned about it.*
51	Yes	*The second choice was influenced by two different ends of the question. While one choice was to not have any information about diversity inclusion whatsoever the other option was to learn the information and then learn how to provide support and spread the information which is a better option than the latter.*	Yes	*My decision to choose the option of receiving DEI initiatives was influenced by my own experiences with diversity clubs and other initiatives outside of the campus that relate to my own identity. I chose this one initially over the one on how to promote it because I did not want to be overwhelmed with information on how to spread information as well as learning about the diversity options.*
52	Yes	*Nothing really influenced by choice I guess. I am just interested in DEI and love getting involved with the university and DEI opportunities.*	Yes	*I'm interested in DEI, especially being in the WGSS and Political Science departments, it is important for students to be more aware of DEI and everything it has to offer at the university. It was an easy answer for me, and I didn't even have to think about it! I love DEI.*
53	Yes	*I do not feel that I have a lot of knowledge in that area, so I was interested to learn more. I am familiar with DEI, but do not know much about how it pertains to KU.*	Yes	*I chose to receive information about DEI initiatives and how to promote it because I would love to do my part to help spread awareness for it. I support DEI but don't know a ton about it, so I think being able to learn about it and help support is really important.*
54	Yes	*While I had already chosen to learn more about DEI and learn how to promote it in the previous question, when it came down to picking to learn more or learn nothing at all -- I chose to stick with my first answer and learn how to promote it as well.*	Yes	*My answer was not influenced by anything other than a desire to be able to promote DEI at KU. I didn't just select the choice that would inform me because I would also to learn to apply that knowledge learned to daily life.*
55	Yes	*I decided to receive information about DEI initiatives because it is something I do not know a lot about. My knowledge to learn more influenced me to make the decision I did.*	Yes	*I wanted to receive information to learn more about it but I a not sure it is something I am comfortable promoting with out knowing the information yet.*
56	Yes	*I chose this option because I want to learn more about DEI initiatives that are on campus.*	Yes	*I chose this option because I want to receive information about DEI initiatives and what this information might look like. I also want to learn how this can be promoted to more students on campus.*

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Appendix A: Informed Consent

Students' preferences

Information Statement

Key information:

- Your participation in this study is completely voluntary.
- Your participation is expected to take between approximately 10-15 minutes to complete.
- You will be asked to complete surveys. More detailed information on the procedures can be found below.
- For compensation, you will receive .50% extra credit (added to your final course grade).
- The content of the survey should cause no more discomfort than you would experience in your everyday life.
- Although participation may not benefit you directly, we believe that the information obtained from this study will help us gain a better understanding of students' preferences.
- You can provide your name and contact information if you want to receive resources based on your preferences. You will be given this opportunity in a separate link to protect confidentiality. That is, this procedure will be separate from your survey responses.
- Your alternative to participating in this research study is not to participate.

The Department of Applied Behavioral Science at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are conducting this study to better understand students' preference for access to resources at the university. Your participation is solicited, although strictly voluntary. Your name will not be associated in any way with the research findings. Your identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission. All data collected will be anonymous. Your responses will be stored on password-protected encrypted hard drives and KU Qualtrics database. It is possible, however, with internet communications, that through intent or accident someone other than the intended recipient may see your response.

If you would like additional information concerning this study before or after it is completed, please feel free to contact us by email or mail.

Completion of the surveys indicates your willingness to take part in this study and that you are at least 18 years old. If you have any additional questions about your rights as a research participant, you may call (785) 864-7429, email irb@ku.edu, or mail the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, KS 66045-7563.

Sincerely,

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