

Motivating Prosocial Behavior:  
The Potential of Positive Self-Directed Emotions

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## ABSTRACT

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#### The Potential of Positive Self-Directed Emotions

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Faced with global challenges, like environmental degradation, poverty, social injustice, and discrimination against marginalized societal groups, it is important to develop strategies that promote concern for the well-being of others and encourage prosocial action. Engaging in prosocial behaviors can contribute to positive social change through reducing discrimination, improving the situation and well-being of those in need, and fostering more sustainable personal lifestyles. One important factor that limits human prosociality is our ‘finite pool of worry’, the fact that humans have only finite resources, physiologically, cognitively, and socially (Linville & Fischer, 1991; Weber, 2006). Effortful and costly prosociality (Dovidio, 1984; Gneezy, Imas, Brown, Nelson, & Norton, 2012; Rand, Greene, & Nowak, 2012; Rand & Nowak, 2013; Simpson & Willer, 2008), especially towards distant and unknown others, stigmatized groups, or the natural environment, may not receive preference in the allocation of resources over self-related goals and the fulfillment of crucial personal needs. One of the most fundamental human needs is establishing and maintaining a positive self-image (Epstein, 1973; Heine, Lehman, Markus, & Kitayama, 1999; Leary, Tambor, Terdal, & Downs, 1995). This dissertation investigates two strategies for motivating prosocial behavior that leverage this need for a positive self-image and the fact that humans are motivated to fulfill it. Paper I explores anticipated emotions in the context of pro-environmental decision

making. It assess the effects of inducing people to consider their future feelings with a certain decision they are about to take. Results show that inducing people to anticipate pride from prosocial action versus guilt from inaction is relatively more effective at instilling pro-environmental motivation. Furthermore, exploratory findings point toward potential reactance to attempts to solicit prosocial behavior by prompting anticipated guilt. Papers II and III explore the potential of a values affirmation intervention to motivate prosocial behavior. Starting from self-affirmation theory (Steele, 1988), paper II hypothesizes that the act of affirming one's values may increase positive self-directed emotions ('positive self-regard') which can translate into downstream prosociality. It proposes a potential explanation for this effect, such that a heightened positive sense of self, stemming from engaging in the affirmation intervention, may reduce worry about the self, thus freeing up cognitive and emotional resources to engage in behaviors directed towards others. Results show that a values affirmation intervention can successfully promote prosocial behavior towards unknown and distant others in the form of volunteering time and donating real money to charity. As hypothesized, positive self-regard mediates the effect of the affirmation intervention on prosociality. Paper III extends the scope of the work to situations in which the beneficiaries of the prosocial action are members of marginalized and stigmatized societal groups, such as ex-prisoners. It tests the generalizability of the hypothesized affirmation effects in two countries, Nigeria and the United States. Results show that engaging members of the public in a values affirmation intervention can reduce discriminatory tendencies and promote prosociality towards ex-prisoners in both countries under investigation. Implications and recommendations for policy and practice are discussed in each paper.

This dissertation is of high theoretical as well as applied relevance and makes important contributions to scholarship and practice. It contributes to the advancement of psychological theory as well as its application potential to help foster social change in an endeavor to address some of the most pressing and challenging social issues nations around the world face.

## TABLE OF CONTENTS

LIST OF FIGURES AND TABLES.....	iv
ACKNOWLEDGMENTS .....	vi
DEDICATION .....	vii
INTRODUCTION .....	1
PAPER I: The influence of anticipated pride and guilt on pro-environmental decision making.....	18
Abstract .....	19
Introduction.....	20
Anticipated emotions and decision making .....	20
Pro-environmental behavior and the anticipation of pride and guilt .....	21
Present research .....	24
Pilot.....	26
Methods.....	27
Results.....	31
Discussion .....	37
Conclusion .....	42
References.....	43
Supplementary Information .....	47
Pilot Study.....	47
Experimental Study.....	56
PAPER II: Values affirmation can motivate prosocial action by leveraging positive self-regard .....	65
Abstract.....	66

Introduction.....	68
Values affirmation to foster a positive self-image.....	72
Mechanism underlying affirmation effects.....	74
Promoting prosociality.....	76
The present study .....	78
Methods.....	78
Results.....	82
Prosocial behavioral intentions.....	82
Prosocial behavior.....	82
Mediation analysis .....	83
Discussion.....	84
Conclusion .....	89
References.....	90
Supplementary Information .....	96
Intention Study.....	96
Behavior Study.....	99
PAPER III: Reducing discrimination and fostering prosociality towards ex-prisoners in Nigeria and the U.S. through values affirmation .....	105
Abstract.....	106
Introduction.....	108
The proposed intervention .....	114
Methods.....	118
Nigeria Study .....	118
U.S. Study .....	125
Results.....	127

Nigeria Study .....	127
U.S. Study .....	130
Generalizability of observed effects across countries .....	133
Mediation analysis .....	134
Discussion .....	136
Conclusion .....	143
References .....	144
Supplementary Information .....	151
Nigeria Study .....	151
U.S. Study .....	158



## LIST OF FIGURES AND TABLES

Paper I, Figure 1: Influence of pride and guilt inductions on pro-environmental behavior per outcome measure .....	34
Paper I, Figure 2: Density plots of anticipated pride, guilt, as well as control group distributions.....	36
Paper II, Figure 1: Proportion of respondents indicating willingness to complete the unpaid study in the control and affirmation groups (Intention Study).....	82
Paper II, Figure 2: Proportion of respondents who completed the unpaid study (A) and amount donated to charity (B) in the control and affirmation groups (Behavior Study)..	83
Paper III, Figure 1: Prosocial behavioral intentions in general (A) and towards ex-prisoners (B) for control and affirmation groups (Nigeria) .....	128
Paper III, Figure 2: Intentions to engage in tutoring program for ex-prisoners for control and affirmation groups (Nigeria) .....	128
Paper III, Figure 3: Discrimination levels for control and affirmation groups (Nigeria)	129
Paper III, Figure 4: Prosocial behavioral intentions in general (A) and towards ex-prisoners (B) for control and affirmation groups (U.S.) .....	131
Paper III, Figure 5: Donation behavior for control and affirmation groups (U.S.).....	131
Paper III, Figure 6: Intentions to engage in tutoring program for ex-prisoners for control and affirmation groups (U.S.) .....	132
Paper III, Figure 7: Discrimination levels for control and affirmation groups (U.S.) ....	133
Paper III, Table 1: Treatment by country interaction analysis for combined Nigeria and U.S. samples.....	134
Paper III, Table 2: Levels of positive self-regard for Nigeria and U.S. samples.....	135
Paper III, Table 3: Mediation results for Nigeria and U.S. samples.....	136

*Supplementary Figures and Tables*

Paper I, Figure S1. Relationship between experienced pride[guilt] and green choice .....	49
Paper I, Table S1. Regression table with controls .....	50
Paper I, Table S2. Demographic characteristics of the study sample (Pilot Study) .....	51
Paper I, Table S3. Demographic characteristics of the study sample (Experimental Study) .....	58
Paper II, Table S1. Demographic characteristics of the study sample (Intention Study) .	96
Paper II, Table S2. Demographic characteristics of the study sample (Behavior Study) .	99
Paper II, Table S3. Average donations by charity .....	99
Paper III, Figure S1. Results of quantitative pilot .....	152
Paper III, Table S1. Demographic characteristics of the study sample (Nigeria Study)	153
Paper III, Table S2. Demographic characteristics of the study sample (U.S. Study) .....	158
Paper III, Table S3. Average donations by charity .....	158

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## DEDICATION

To the loved ones in my life. My family, my friends - near and far, and all those who have been on my journey with me and have helped shape me into the person I am.

Thank you for supporting me, listening to me, comforting me, laughing with me, inspiring me, loving me, believing in me, and encouraging me to believe in myself and reach for the stars.

*You never know what you are capable of, until you try.*

## INTRODUCTION

Faced with global challenges like environmental degradation, climate change, poverty, social injustice, and discrimination against marginalized groups, it is important to develop strategies that foster prosocial behavior to help address these challenges.

Prosocial behaviors are acts that are beneficial to other people (Penner, Dovidio, Piliavin, & Schroeder, 2005; Weinstein & Ryan, 2010), such as protecting and promoting the well-being of others (Grant & Berg, 2012; Schwartz & Bilsky, 1990). They can involve benefits for the actor, such as in the case of cooperation or collective action, or be entirely altruistic and centered on the recipient (Batson, 1987; Batson & Powell, 2003; Batson & Shaw, 1991; Keltner, Kogan, Piff, & Saturn, 2014; Penner et al., 2005; Schultz & Zelezny, 1998; Schwartz & Howard, 1984; van Zomeren, 2013). A wide range of behaviors can therefore be described as prosocial actions, such as interpersonal helping and support behavior, comforting, sharing, cooperating, collective action, volunteering one's time, or charitable giving (Batson & Powell, 2003; Keltner et al., 2014; Penner et al., 2005). Prosociality is also expressed in the context of pro-environmental action. For instance, considerations to prevent harmful consequences of environmental damage to others (Schultz & Zelezny, 1998) or to preserve a healthy environment for future generations (Zaval, Markowitz, & Weber, 2015) depict pro-environmental behaviors as cases of general prosocial behavior (Graton, Ric, & Gonzalez, 2016).

Engaging in such prosocial behaviors can contribute to positive social change through, for instance, reducing discrimination, improving the situation and well-being of those in need, or fostering more sustainable personal lifestyles.

Evolutionary biology posits that humans are inclined to be prosocial because of the evolutionary success of people who displayed such dispositions (Keltner et al., 2014; Penner et al., 2005). We share food, divide labor, cooperate and help each other (Axelrod & Hamilton, 1981; Gintis, 2000; Keltner et al., 2014; Silk & House, 2011). Economics, on the other hand, takes a different view on human nature, focusing instead on selfish utility maximization (Holmes, Miller, & Lerner, 2002; Mueller, 1986) and the weighing of costs and benefits (Penner et al., 2005). The reality probably lies somewhere in between. Humans clearly have prosocial and other-regarding preferences, but often do not behave with the benefit of others in mind, especially when those others are distant and unknown, members of marginalized or stigmatized societal groups, or when effects of our behaviors are not immediate and may not affect our lives directly such as in the case of environmental degradation (e.g., Burnstein, Crandall, & Kitayama, 1994; Dawes, van de Kragt, & Orbell, 1988; Maner & Gailliot, 2007; Neyer & Lang, 2003; Weber, 2006).

While there may be various influences that contribute to an individual's decision whether to act prosocially in a given context, one important factor that limits human prosociality is that it can be costly to the self (Dovidio, 1984; Gneezy, Imas, Brown, Nelson, & Norton, 2012; Rand, Greene, & Nowak, 2012; Rand & Nowak, 2013; Simpson & Willer, 2008). Personal costs can occur in the psychological as well as material domains. Investing personal resources, such as time, effort, worry about others, or money, decreases resources left for the individual. This is problematic in light of the fact that humans have only finite resources, physiologically, cognitively, and socially (Linville & Fischer, 1991; Pashler, 1998; Pashler, Johnston, & Ruthruff, 2001; Simon,

1972, 1990). We only have a ‘finite pool of worry’ (Linville & Fischer, 1991; Weber, 2006), i.e., our capacity for worry and concern is limited. Hence, there is a need to divide resources across multiple goals and needs. In this process more pre-potent (i.e., pre-dominant) goals receive priority (Maslow, 1943). Effortful and costly prosociality, in terms of time, worry, money and other personal and cognitive resources (Dovidio, 1984; Gneezy et al., 2012; Rand et al., 2012; Rand & Nowak, 2013; Simpson & Willer, 2008), especially towards distant and unknown others, stigmatized groups, or the natural environment, may not receive preference in the allocation of resources over self-related goals and the fulfillment of crucial personal needs.

One of the most fundamental self-directed human needs is establishing and maintaining a positive self-image. Much work in psychology supports the notion that humans have a fundamental need to maintain a positive view of themselves (Epstein, 1973; Heine, Lehman, Markus, & Kitayama, 1999; Leary, Tambor, Terdal, & Downs, 1995; McQueen & Klein, 2006). In fact, it was described as “easily the most common and consensually endorsed assumption in research on the self” (Heine et al., 1999, p. 766).

This dissertation investigates two strategies for promoting prosocial behavior that leverage this need for a positive self-image and the fact that humans are motivated to fulfill it. The two approaches under investigation are the use of anticipated emotions about future actions and values affirmation interventions. Both aim to use the potential of positive self-directed emotions to engender prosocial action, in different ways. Strategies involving anticipated emotions aim to make the potential of prosocial action to fulfill the need for a positive self-image salient to people to motivate them to act in a way to fulfill

the need, for instance through engaging in pro-environmental behaviors. Values affirmation interventions aim to fulfill the need for a positive self-image through engaging in the intervention. As proposed in this dissertation, this may reduce worry about the self and free up resources to engage in ‘worry about others’ and action on their behalf, such as volunteering time to support those in need.

The anticipated emotions intervention examined in this dissertation induces people to consider their concrete feelings with a certain decision they are about to take, such as how proud they would feel for engaging in a certain pro-environmental or prosocial action or how guilty they would feel for not engaging. Since people are motivated to feel good about themselves, this strategy postulates that people may take the decision and engage in the behavior that will satisfy this goal and engender positive emotions about the self. Values affirmation interventions take a slightly different approach. Instead of making salient to people what they might need to do or could do to feel good about themselves, affirming one’s values seeks to demonstrate self-integrity and adequacy to the individual (Steele, 1988). This dissertation research hypothesizes that engaging in values affirmation may increase positive feelings about the self and proposes that such heightened positive self-directed emotions could reduce worry about one’s positive self-image and thus free up cognitive and emotional resources to engage in other behaviors, such as prosocial action. This proposition constitutes one way to explain values affirmation effects on prosociality. Other processes may be involved, however. For instance, engaging in the affirmation exercise and reflecting on instances in which an important personal value was successfully expressed, could also engender feelings of perceived efficacy which could be a further involved mediator. This dissertation research



offers a first step in shedding light on the mechanism underlying values affirmation interventions in the context of prosocial behavior. It opens the door for future research to examine the roles and interplay of other potential factors and processes.

Furthermore, with regards to understanding the workings of values affirmation it is important to note that values affirmation interventions are distinctly different in their approach from simple positive mood inductions. Values affirmation connects participants with their selves on a deep, personal level. This dissertation research shows that positive self-directed emotions, such as feeling at peace and good about the self, mediate the relationship between the affirmation intervention and prosocial outcomes. To provide empirical evidence for the distinction between values affirmation and mood inductions, studies have investigated whether values affirmation is merely a positive mood induction and whether observed affirmation effects could be explained solely by positive mood instead of connection to the self and one's values. Citing evidence from prior studies such as Steele and Liu (1983), Steele (1988) expresses that effects of self-affirmation procedures do not stem from mood enhancement. Several more recent studies that investigated the effects of values affirmation on mood report that engaging in the values affirmation exercise generally does not improve mood states and that observed affirmation outcomes cannot sufficiently be explained by enhanced mood (Cohen, Aronson, & Steele, 2000; Hall, Zhao, & Shafir, 2014; Fein & Spencer, 1997; Sherman, 2013; Sherman, Nelson, & Steele, 2000; Spencer, Fein, & Lomore, 2001). In an experimental study Hall et al. (2014) compare effects of an affirmation intervention with a positive mood induction. While the affirmation intervention led to positive effects on the outcome variables, the mood induction did not, with effects being comparable to

levels of a control group. The authors conclude that self-affirmation effects cannot be attributed to enhanced positive mood. Similarly, in an experimental study, Schmeichel & Vohs (2009) compare the effects of a mood induction and an affirmation exercise and show that only the values affirmation intervention led to beneficial outcome effects.

Cohen et al. (2000) test heightened self-regard as well as enhanced mood following an affirmation intervention and find no significant treatment effect on mood. Furthermore, self-regard was correlated with the dependent measures while mood was not; supporting the author's claim that mood does not offer a sufficient explanation. Several other studies similarly report that a values affirmation intervention had no significant effects on mood state (e.g. Fein & Spencer, 1997; Sherman et al., 2000; Shira & Martin, 2005).

In the following, an overview of the research questions, experimental designs, as well as results of each paper in this dissertation will be given.

*Paper I* explores the influence of anticipated emotions on pro-environmental decision making. Specifically, it compares the effects of two differently valenced emotions: pride and guilt. Both pride and guilt are highly relevant in the environmental domain as they orient individuals to social concerns (Baumeister, Stillwell, & Heatherton, 1994; Parkinson & Illingworth, 2009). Guilt, in particular, is frequently targeted by environmental campaigners and communicators. However, guilt approaches may also run the risk of alienating people and eliciting reactance which may ultimately inhibit sustainable behaviors (e.g., Center for Research on Environmental Decisions and ecoAmerica, 2014; Coulter & Pinto, 1995; Miller, 1976; Weber, 2015). This paper seeks to determine whether targeting positive anticipated emotions (i.e., pride) is relatively

more effective than targeting negative anticipated emotions (i.e., guilt) in promoting pro-environmental decision making. Results provide evidence that anticipating one's positive future emotional state from pro-environmental or prosocial action just prior to making an environmental decision leads to higher pro-environmental behavioral intentions compared to anticipating one's negative emotional state from inaction. Furthermore, exploratory results comparing anticipated pride and guilt inductions to baseline behavior point toward a reactance eliciting effect of inducing anticipated guilt.

*Paper II* assesses the potential of a values affirmation intervention to foster prosocial action towards distant and unknown others. At the same time the paper formally assesses the mediating role of positive self-directed emotions ('positive self-regard') in the affirmation effect on prosocial behavior as outlined above. Across two experimental studies, results show that compared to control group participants, affirmed participants display greater willingness to volunteer time and exhibit increased actual prosocial behavior by completing an unpaid study and donating real money to charity. Furthermore, as hypothesized, engaging in the values affirmation intervention increases positive self-regard which mediates the effect on prosocial behavioral intentions as well as actual behavior. The suggested way of conceptualizing the affirmation effect with regards to resource availability offers a way to explain the observed mediating effect of positive self-regard on prosocial behavior. Other factors, apart from resource availability, could play a role, such as feelings of perceived efficacy. Future research should tease apart the relative impact and role various mediators might play.

*Paper III* replicates findings from paper II on the prosociality enhancing effects of a values affirmation intervention and extends the scope of this line of research to

situations in which the beneficiary of the prosocial action is specified to be a member of a marginalized and stigmatized societal group, i.e., an ex-prisoner. The paper furthermore tests the generalizability of observed affirmation effects cross-culturally. Towards this end, the paper investigates whether a values affirmation intervention can reduce discriminatory behavioral tendencies and foster prosociality towards ex-prisoners in Nigeria and the United States. Both countries struggle with the reintegration of ex-prisoners into society upon release from prison (e.g. Durose, Cooper, & Snyder, 2014; Johnson, 2008; Travis, 2005). This reintegration challenge is perpetuated by societal stigmatization, labeling, and discrimination against ex-prisoners (e.g., Brown, 2016; Ogbozor, Odoemena, & Obi, 2006; Thompson & Cummings, 2010; Ugwuoke, 2010). Addressing the public to change their discriminatory behavioral tendencies towards ex-prisoners and to foster support may help to promote successful rehabilitation and reintegration of ex-prisoners into society (Brown, 2016; Hirschfield & Piquero, 2010; Wright & Cesar, 2013). Results across the two countries provide evidence that engaging the public in values affirmation can significantly reduce discriminatory behavioral tendencies and motivate prosociality towards ex-prisoners. Furthermore, supporting findings of paper II, positive self-regard emerged as a mediator of the affirmation effect for the majority of dependent measures in both countries.

The research presented in this dissertation is of high theoretical as well as applied relevance and makes important contributions to scholarship and practice. This dissertation research critically extends knowledge on psychological theory in a variety of domains. It helps to shed light on the divergent influences of inducing positive versus negative anticipated self-directed emotions on human decision making and motivation.

Furthermore, it investigates the mechanism of values affirmation intervention effects by formally testing the mediating role of positive self-regard on a variety of outcome measures in various contexts. This research additionally contributes to theory by testing the generalizability of values affirmation effects across cultures. By running two studies with identical research questions and experimental design in two countries, the presented work allows for a more direct comparison of observed effects cross-nationally than previous studies that have focused solely on one country at a time. Furthermore, this research deepens the field's understanding of values affirmation interventions as a distinctive type of self-affirmation. The most commonly used values affirmation intervention protocol presents participants with a list of values, from which participants pick the one that is most important to them and answer a range of essay questions pertaining to the picked value (e.g., Cohen, Garcia, Apfel, & Master, 2006; Harris & Napper, 2005; Sherman et al., 2000; Sparks, Jessop, Chapman, & Holmes, 2010; van Prooijen, Sparks, & Jessop, 2012). The exact list of values used varies across studies (McQueen & Klein, 2006). Based on the theoretical foundation of values affirmation interventions, the effectiveness of the intervention should not depend on the specific list of values used. The essence of this type of intervention is that participants affirm themselves by reflecting on a value and associated life events that are meaningful to them, i.e., the content of the affirmation intervention is self-generated (Sherman, 2013). The self-generated and personally tailored content allows each participant to tap into their specific valued identity (Cohen & Sherman, 2014; Sherman, 2013).

To provide empirical evidence for this theoretical assumption, this dissertation research uses a different set of values from those commonly used in values affirmation

studies in domains benefiting the individual and the few studies that have begun to test effects in the prosocial domain. In testing affirmation effects on prosociality, both Lindsay and Creswell (2014) as well as Thomaes, Bushman, de Castro, and Reijntjes (2012) use variations of the commonly employed list from work in domains benefiting the individual, such as positive health behavior change or improved academic performance. These lists use broad values such as artistic skills/aesthetic appreciation, physical attractiveness, business/managerial skills, athletics, and relations with friends/family (e.g., Cohen et al., 2000). To extend previous research and test the assumption that values affirmation intervention effects are not tied to one specific set of values, this dissertation research uses different values, such as forgiveness, honesty, tolerance, and sincerity. Using these different value lists, the research presented in this dissertation finds positive affirmation effects, extending prior work. Further evidence stems from a comparison between papers II and III in this dissertation. Paper III uses a slightly different list of values compared to paper II. Despite the different values used, findings of paper III replicate and extend results from paper II. The presented combined evidence supports the theoretical assumption that values affirmation effects do not depend on specific values. This dissertation, therefore, critically extends knowledge on the nature of values affirmation interventions.

Lastly, the research presented in this dissertation is among the first to test the applicability of a values affirmation intervention in the African context, specifically in Nigeria. Finally, it critically adds to the limited work on values affirmation interventions in the prosocial domain and is the first to extend and test the scope of affirmation

interventions in the domain of changing the public's discriminatory and behavioral tendencies towards members of marginalized societal groups.

Apart from its contribution to scholarship and theory, the body of research presented in this dissertation is of high applied significance and furthers insights into strategies to motivate prosocial behavior across domains, recipients, and countries. It highlights the importance of carefully testing and assessing messaging that includes emotional appeals to leverage positive effects and avoid reactance effects. Furthermore, it provides evidence that a values affirmation intervention could be used to enhance prosociality towards distant and unknown others, such as volunteering personal time or engaging in charitable giving. Finally, this dissertation research shows that a values affirmation intervention can also be effective at reducing discriminatory tendencies and fostering prosociality towards marginalized and stigmatized societal groups, such as ex-prisoners.

The presented findings offer valuable insights that may inform the design of large-scale interventions or behavior change campaigns that could ultimately be applied in practice to inform and influence policy making and tackle important social challenges: Crafting environmental messaging and communication strategies using emotional appeals that highlight positive self-directed emotions, such as anticipated pride, rather than negative self-directed emotions such as anticipated guilt, may contribute to fostering conservation behavior and sustainability; allowing humans to address the challenges of environmental degradation and climate change mitigation. Motivating monetary contributions or the contribution of personal time through values affirmation to, for instance, directly support those in need or support organizations involved in advocacy

work, may contribute to remedying the plight of the poor and the reduction of inequality. Finally, reducing discrimination against marginalized societal groups, such as ex-prisoners, and fostering support by engaging the public in self-affirmative thought processes may contribute positively to reintegration efforts, the reduction of intergroup conflict, and the promotion of social justice.

In summary, this dissertation research advances psychological theory and has practical implications for fostering social change to address some of the most pressing and challenging social issues faced around the world.



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PAPER I: The influence of anticipated pride and guilt on pro-environmental decision making

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## **Abstract**

The present research explores the relationship between anticipated emotions and pro-environmental decision making comparing two differently valenced emotions: anticipated pride and guilt. In an experimental design, we examined the causal effects of anticipated pride versus guilt on pro-environmental decision making and behavioral intentions by making anticipated emotions (i.e., pride and guilt) salient just prior to asking participants to make a series of environmental decisions. We find evidence that anticipating one's positive future emotional state from green action just prior to making an environmental decision leads to higher pro-environmental behavioral intentions compared to anticipating one's negative emotional state from inaction. This finding suggests a rethinking in the domain of environmental and climate change messaging, which has traditionally favored inducing negative emotions such as guilt to promote pro-environmental action. Furthermore, exploratory results comparing anticipated pride and guilt inductions to baseline behavior point toward a reactance eliciting effect of anticipated guilt.

## **Introduction**

A growing body of research points to the central role that the anticipation of future affective states plays in shaping future- and other-oriented decision making (Baumeister & Lobbestael, 2011; Baumeister, Vohs, DeWall, & Zhang, 2007). Emotionally engaging prosocial behaviors, such as helping victims in need or donating money to a charitable organization, may be particularly sensitive to such processes (Shaw, Batson, & Todd, 1994). The anticipation of future affective states, both positive and negative, may be a powerful motivator of taking positive actions on behalf of others, particularly among those that carry strong personal and/or cultural norms of caring for others. In the present study, we extend the growing literature on anticipated emotions to examine how two specific states – anticipating feeling pride and guilt – compare in their influence on pro-environmental decision making and behavioral intentions.

### **Anticipated emotions and decision making**

Mellers and McGraw (2001) provide a framework for understanding how decision makers' anticipation of the future affective consequences of actions yet-to-be-taken influence decisions made in the present. Such cognitive predictions about future emotions are referred to as 'anticipated emotions' (Carrera, Caballero, & Munoz, 2012). In simple terms, people tend to avoid taking actions that could result in negative emotions (e.g., guilt, sadness) and to pursue those that will result in positive states (e.g., pride, joy).

An emerging body of work suggests that the anticipation of future emotional states may play a particularly powerful role in shaping prosocial and other-oriented behaviors (e.g., Baumeister & Lobbestael, 2011; van der Schalk, Bruder, & Manstead,



2012). For example, when making the decision of whether or not to donate bone marrow, contemplating future feelings of guilt related to inaction can lead to donating (Lindsey, 2005). Similarly, when playing a bargaining game with others, anticipating feelings of pride about fair gameplay has been shown to support fair behavior (van der Schalk et al., 2012). These and related results suggest that encouraging individuals to anticipate how they will feel about upcoming other-oriented decisions may be a novel and under-appreciated pathway to promoting prosocial behaviors. Towards this end, the current paper explores and compares whether the anticipation of specific future emotional states can influence pro-environmental decision making.

### **Pro-environmental behavior and the anticipation of pride and guilt**

Recent research suggests links between anticipated emotions and sustainable behavior, focusing on two discrete types of emotions in the environmental domain: feelings of guilt and pride. These emotions are highly relevant to pro-environmental motivations, as both pride and guilt orient individuals to social concerns (Baumeister, Stillwell, & Heatherton, 1994; Parkinson & Illingworth, 2009) and moral considerations (Nelissen, Leliveld, van Dijk, & Zeelenberg, 2011; Steenhaut & van Kenhove, 2006; Wang, 2011). Moreover, both emotions are frequently targeted by environmental campaigners and communicators. This is particularly true of guilt, which is assumed by many environmentalists to be a powerful motivator of reparative (Baumeister et al., 2007; Harth, Leach, & Kessler, 2013; Lu & Schuldt, 2015) and preventative action (Elgaaied, 2012; Kaiser, 2006). Although guilt-oriented approaches to encouraging pro-environmental behavior can be successful (e.g., Elgaaied, 2012; Kaiser, 2006; Lu & Schuldt, 2015), it is important to note that they also run the risk of alienating people and

ultimately inhibiting sustainability (e.g., Center for Research on Environmental Decisions and ecoAmerica, 2014; Coulter & Pinto, 1995; Weber, 2015). A smaller number of campaigns have attempted to link environmental conservation with positive emotions (e.g., [www.rare.org](http://www.rare.org)). Although relatively few controlled demonstrations exist, some research suggests that pride-oriented approaches to behavior change could be quite successful and robust (Bissing-Olson, Fielding, & Iyer, 2016; Onwezen, Antonides, & Bartels, 2013; Onwezen, Bartels, & Antonides, 2014).

If the primary emotional reaction people experience when exposed to environmental degradation is negative, then pro-environmental responses may be aimed at relieving that negative feeling. Supporting this notion, a number of studies have shown a positive relationship between guilt and pro-environmental action (e.g., Kaiser, 2006; Lu & Schuldt, 2015). Elgaaied (2012), for example, demonstrated a relationship between anticipated guilt and pro-environmental behavior linked to recycling patterns in France. Carrus, Passafaro, and Bonnes (2008) investigated public transportation use and recycling behavior and similarly found a positive effect of negative anticipated emotions on the desire to act pro-environmentally. Lu and Schuldt (2015) explored the relationship between incidental guilt and support for climate change policy and report a positive main effect of a guilt induction compared with no emotional induction.

On the other hand, preventing environmental degradation may entail positive feelings; thus, a desire to experience positive emotions may also motivate pro-environmental action. Although benefits of associating positive emotional experiences with pro-environmental actions have been suggested (Carrus et al., 2008; Vining & Ebreo, 2003), little empirical work has examined whether such a correlational or causal

connection in fact exists. Two recent exceptions are studies conducted by Onwezen and colleagues that identified a positive relationship between positive emotions and pro-environmental behavior (Onwezen et al., 2013, 2014). In samples of Dutch respondents, the authors found that anticipated pride mediated the effects of normative attitudes concerning environmentally friendly behavior on pro-environmental behavioral intentions, such as intending to buy environmentally friendly products (Onwezen et al., 2013).

Other recent work suggests a potentially stronger effect of positive compared to negative anticipated emotions on prosocial behavior more generally. In a study on adolescents' anticipated pride or guilt in situations of moral or immoral actions, Krettenauer and Johnston (2011) found an asymmetry between moral emotion expectancies for actions versus inactions: positive emotion expectancies were stronger when anticipating prosocial actions as compared to resisting antisocial impulse, while negative emotion expectancies were stronger when anticipating antisocial behavior as compared to the failure to act prosocially. Thus, in the context of motivating prosocial behavior, positive emotion expectancies from action (i.e., pride) may be more effective compared to negative emotion expectancies from inaction (i.e., guilt). This finding was confirmed across cultures (Krettenauer & Jia, 2013). Finally, in a recent experience sampling study on daily experiences of transitory moral emotions and pro-environmental behavior among college students, Bissing-Olson et al. (2016) found that feelings of pride, but not guilt, led to subsequent self-reported pro-environmental behaviors. However, this relationship was found only among participants who perceived positive pro-environmental descriptive norms among their peers. Although the authors did not

experimentally test the role of anticipated emotions and are thus unable to make claims of causality, these results point to the potentially more powerful role that anticipated pride could play in motivating green (environmentally friendly) behavior compared to anticipated guilt. A logical next step would be to experimentally test and compare the roles of anticipated pride versus guilt on pro-environmental motivation.

### **Present research**

Taken together, previous findings suggest that in the environmental domain - a domain that is generally perceived as being impersonal and distant (Weber, 2006) yet also emotionally and morally engaging (e.g., Carrus et al., 2008; Elgaaied, 2011) - anticipated emotions may be powerful leverage points for promoting pro-environmental motivation. Moreover, the small number of studies that have investigated the role of anticipated guilt and pride (or negative and positive emotions more generally) indicate that in this domain, positive anticipated emotions may exert a stronger “pull” than the “push” provided by anticipating negative emotions. One important shortcoming of extant research in this domain, however, is that past studies of anticipated emotions and pro-environmental behavior (that we have been able to identify) are correlational in design and treat emotions as factors which affect behavior indirectly rather than as direct causal drivers of pro-environmental motivation and behavioral intent. This is problematic for applying these findings in practice, as correlational results may not directly translate into effective intervention strategies. Indeed, there may be a difference in efficacy between an intervention that explicitly aims to make certain emotions salient versus one that indirectly causes certain emotional responses.

Further, although some past work demonstrates a positive relationship between anticipated guilt and pro-environmental behavior, it seems plausible that heavy-handed interventions that explicitly target negative feelings will result in reactance and subsequent decreases in desired behavior (Miller, 1976). Indeed, there is a growing realization that messaging that targets negative emotions, if expressed too drastically, may lead to anger and reactance and actually discourage desired behavioral outcomes (Center for Research on Environmental Decisions and ecoAmerica, 2014; Coulter & Pinto, 1995; Weber, 2015). Targeting negative emotions may also lead to a single action bias (Center for Research on Environmental Decisions, 2009; Weber, 2006), whereas positive emotions are more likely to produce a virtuous cycle of prosocial behavior (Fredrickson, 2013).

The objective of the present study then, is twofold: first, to assess whether making positive and negative anticipated emotions salient just prior to decision making can influence pro-environmental decision making; and second, to determine whether targeting positive anticipated emotions (i.e., pride) is relatively more effective than targeting negative anticipated emotions (i.e., guilt). As discussed above, past work in this domain has only examined the mediating effects of anticipated emotions on pro-environmental motivation or the influence of currently experienced emotions on subsequent behavior, rather than experimentally manipulating the salience of anticipated emotions prior to decision making. The present research thus provides a critical missing piece to our understanding of the role anticipated emotions play for pro-environmental decision making.

In order to pursue these core research objectives, we examine the causal influence of anticipated pride versus guilt on pro-environmental decision making and behavioral intentions using an experimental design. This allows us to clarify the relative impact of anticipating pride from an environmentally friendly (green) choice versus guilt from a non-environmentally friendly (brown) choice on environmental decisions. Specifically, we induced participants to reflect upon the future feelings of pride or guilt they might feel as a result of making or not making particular pro-environmental choices, prior to providing opportunities for them to engage in a range of environmental decisions. Given the past findings reviewed above, we hypothesized that pro-environmental choices will be greater among individuals induced to anticipate feelings of pride relative to those induced to anticipate feelings of guilt. Testing this hypothesis is of crucial interest to our primary research question, namely, how the emphasis of anticipated pride versus guilt differentially impacts environmental decision making.

### **Pilot**

A pilot study tested whether making an environmental choice would lead to discrete emotional responses. Results from the pilot study confirmed our expectations that feelings of guilt accompany or follow from making a non-environmentally friendly choice, while the feeling of pride accompanies or follows from a pro-environmental choice. These relationships provide the basis for studying anticipated pride and guilt in their influence on pro-environmental decision making. The pilot also allowed for the development of sensitive measures of environmental decision making used in the subsequent experiment. A diverse sample of 545 U.S. participants was randomly presented with three out of ten possible environmental choice scenarios, each of which

asked them to make a binary decision between a ‘green’ (pro-environmental) option and a ‘brown’ (non-environmentally friendly) option. Results revealed a positive correlational relationship between the experienced level of pride and the likelihood of choosing the green option, such that higher levels of experienced pride were associated with a higher likelihood of choosing green. Conversely, we found a negative relationship between the experienced level of guilt and the likelihood of choosing the green option, controlling for a range of demographic variables as well as environmental attitude. A full description of the pilot methods and results are included in the supplementary materials. Building on these pilot results, the experimental study examined the causal effects of anticipated pride versus guilt on pro-environmental decision making and behavioral intentions by making anticipated emotions (i.e., pride and guilt) salient just prior to making a series of environmental decisions.

## **Methods**

A diverse sample of 1,050 U.S. participants was recruited through Amazon’s Mechanical Turk (MTurk) to participate in an online study. An estimate of target sample size was determined using results from similar studies run in our laboratory using MTurk workers to provide initial estimates of effect sizes for studies of this type, which suggested a small to medium effect size was likely (e.g., Petrovic, Madrigano, & Zaval, 2014; Zaval, Markowitz, & Weber, 2015). To ensure data quality, incomplete responses as well as participants having taken longer than three standard deviations above the mean or shorter than one-third of the median experimental completion time (which was positively skewed) were removed. Final sample size for analysis purposes was 987 participants. This data exclusion and cleaning approach did not change the overall pattern

of results, which remained the same when all participants were included. The study was reviewed and approved by Columbia University's Institutional Review Board. All participants gave informed consent to participate in the study.

Participants were asked to reflect upon either (1) the future pride they might feel as a result of taking a particular pro-environmental action, or (2) the future guilt they might feel as a result of not taking a particular pro-environmental action, prior to making a series of environmental decisions. Participants were randomly exposed to one of three induction methods outlined below, which existed in two versions (pride or guilt), and were thus assigned to one of six treatment groups in a 2 (guilt vs. pride) x 3 (induction type) design. The three different induction methods were chosen to ensure that observed effects did not merely depend on one specific type of anticipated emotion induction, but generalized across a broad range of induction methodologies from prior literature.

The *one sentence reminder* (OS) was the briefest and most direct of all inductions used. It consisted of a single sentence, modeled after Connolly, Reb, and Kausel (2013), which was displayed on the top of the screen while participants completed the survey questions: "*As you make your decisions, keep in mind that you might feel proud [guilty] about your decisions and the alternatives you have picked.*" Participants exposed to the *affective forecasting* (AF) induction were asked to consider feelings of anticipated pride or guilt associated with environmental choices. Specifically, participants were presented with five green versus brown choice scenarios, similar to the ones used in the pilot study. To induce participants to consider anticipated pride or guilt, they were asked to read each scenario and to imagine how proud [guilty] they would feel in the future if they selected (hypothetically) the green [brown] option. Finally, participants exposed to the *writing*



*prompt* (WP) induction were asked to write a brief essay in which they reflected upon a real upcoming decision in which their future choice would make them feel proud or guilty. To help participants think of a future decision to reflect upon, several examples were provided, such as deciding [*not*] to donate blood or deciding [*not*] to help a friend move. The supplementary materials provide a complete description of all three induction methods. We also included a control group to provide baseline data on the behavioral measures in this population. Participants in this condition were only exposed to the outcome measures, as described below.

As a manipulation check to confirm that the anticipated emotion inductions increased levels of anticipated pride or guilt, at the end of the experiment, participants were asked to report the strength of the anticipated pride or guilt they considered while making environmental decisions. Specifically, participants were asked to give ratings for anticipated pride, guilt, and a range of other emotions, which served as fillers to distract from the two anticipated emotions of interest. Note that the manipulation check was designed to test the effectiveness of our experimental inductions, and was not intended to be used for mechanistic analysis or to compare the relative strength of the anticipated emotion inductions. We did not expect anticipated pride and guilt levels to be reported at similar levels across experimental conditions, as the motivation to report positive versus negative emotions may differ. Participants may exhibit a tendency to under-report feelings of guilt in order to avoid self-discrepancies (Higgins, 1987) and over-report feelings of pride to maintain a positive self-image and self-integrity (Cohen & Sherman, 2014; Steele, 1988). Rather, we expected that anticipated pride would be higher in the

pride conditions than in the guilt conditions, and that anticipated guilt would be higher in the guilt conditions than in the pride conditions.

After being exposed to one of the anticipated pride or guilt inductions, all participants were asked to make five environmental decisions. First, participants were exposed to a hypothetical choice scenario involving a social trade-off. Participants were asked to choose between a ‘green’ (pro-environmental) option and a ‘brown’ (non-environmentally friendly) option. The green option was a sofa made out of sustainable and environmentally friendly bamboo fabric, which was only available in somewhat outdated styles. The brown option was a sofa produced using non-sustainable and non-environmentally friendly bleaches, chemicals and synthetic fabrics but coming in more modern styles. Pre-testing of the choice scenario in the pilot study had revealed a roughly 50/50 split between green and brown choices ensuring that there would not be floor or ceiling effects. Participants were next presented with a hypothetical ‘opt-in’ scenario (adapted from Steffel, Williams, & Pogacar, 2016) in which they could choose as few or as many of 14 green amenities for their apartment, such as an energy-star rated fridge. Each amenity added \$3 extra per month to their rent. A higher number of chosen environmental amenities indicated increased pro-environmental engagement. Participants then responded to two measures assessing their pro-environmental behavioral intentions. The first measure assessed future consumer choice behavior and consisted of one question item, which asked participants about their likelihood of “buying a green product in the next month” (1 = *not at all likely*, 7 = *extremely likely*). The second measure used the average score of six items that asked participants how often they intended to perform a series of sustainable actions over the next month, including “unplug appliances and

chargers at night” (adapted from Zaval et al., 2015). In addition to measuring behavioral intentions, we included a consequential measure of actual behavior: people’s willingness to invest in environmental sustainability (Zaval et al., 2015). We gave participants the option of donating part of a potential \$10 bonus, as determined by lottery, to make a real financial donation to a nonprofit environmental advocacy organization, *Trees for the Future*. Participants typed in the amount they would donate, from \$0 to \$10. One participant was randomly selected to receive the bonus, and the indicated donation amount was given to the organization. The supplementary materials provide a complete description of all outcome measures.

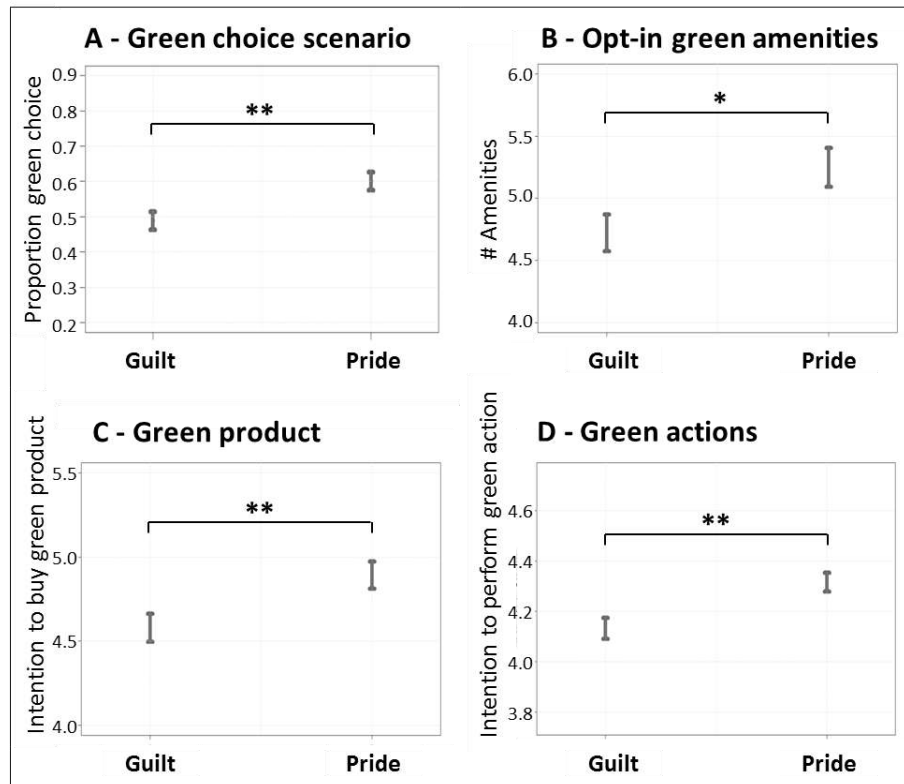
## **Results**

We used a 2 (anticipated emotion: pride vs. guilt) x 3 (induction type: OS vs. AF vs. WP) between-participants factorial design, with separate models (ANOVAs, using a type III partition for the sums of squares) for each of the continuous dependent variables (opt-in, behavioral intentions, donation) and logistic regression for the categorical dependent variable (social choice scenario). To test that effects did not differ across induction methods, the models assessed the effects of the three induction methods, as well as differences in the effect of anticipated pride versus guilt, as well as potential interactions between induction method and the two types of anticipated emotions. As expected, analyses did not reveal a consistent main effect of induction method nor consistent interactions between emotional treatment and induction method, suggesting that observed effects should not depend on one specific induction method. A full report of these statistical analyses is described in the supplementary materials. Results are collapsed across the three induction methods.

Predicted patterns emerged for self-reported ratings of anticipated pride and guilt among participants who were exposed to the pride or guilt inductions, as revealed in the manipulation check. As predicted, participants exposed to an anticipated pride induction reported higher ratings of anticipated pride considered during the decision making process compared with participants who anticipated feeling guilt (anticipated pride rating, pride induction group,  $M = 4.13$ ,  $SD = 1.9$ ; anticipated pride rating, guilt induction group,  $M = 3.59$ ,  $SD = 2.0$ ,  $t(843.77) = -3.99$ ,  $p < .001$ ; Cohen's  $d = .27$ ). Relatedly, those exposed to an anticipated guilt induction reported higher ratings of anticipated guilt compared with those exposed to an anticipated pride induction (anticipated guilt rating, guilt induction group,  $M = 2.51$ ,  $SD = 1.57$ ; anticipated guilt rating, pride induction group,  $M = 2.13$ ,  $SD = 1.47$ ,  $t(843.29) = 3.68$ ,  $p < .001$ ; Cohen's  $d = .25$ ).

As an additional manipulation check for the writing prompt inductions, a content analysis of participants' pride and guilt essays was conducted using the Linguistic Inquiry and Word Count software (Pennebaker, Francis, & Booth, 2001). As expected, results from the content analysis showed that participants in the anticipated pride condition used significantly more positive affect words compared to participants in the anticipated guilt condition, who used more negative affect words (percent positive affect words in anticipated pride essay,  $M = 5.88$ ,  $SD = 2.64$ ; percent positive affect words in anticipated guilt essay,  $M = 2.54$ ,  $SD = 1.92$ ;  $t(237.73) = 11.95$ ,  $p < .001$ ; Cohen's  $d = 1.46$ ; percent negative affect words in anticipated guilt essay,  $M = 3.69$ ,  $SD = 2.37$ ; percent negative affect words in anticipated pride essay,  $M = 0.69$ ,  $SD = 1.11$ ;  $t(206.71) = -13.64$ ,  $p < .001$ ; Cohen's  $d = 1.6$ ).

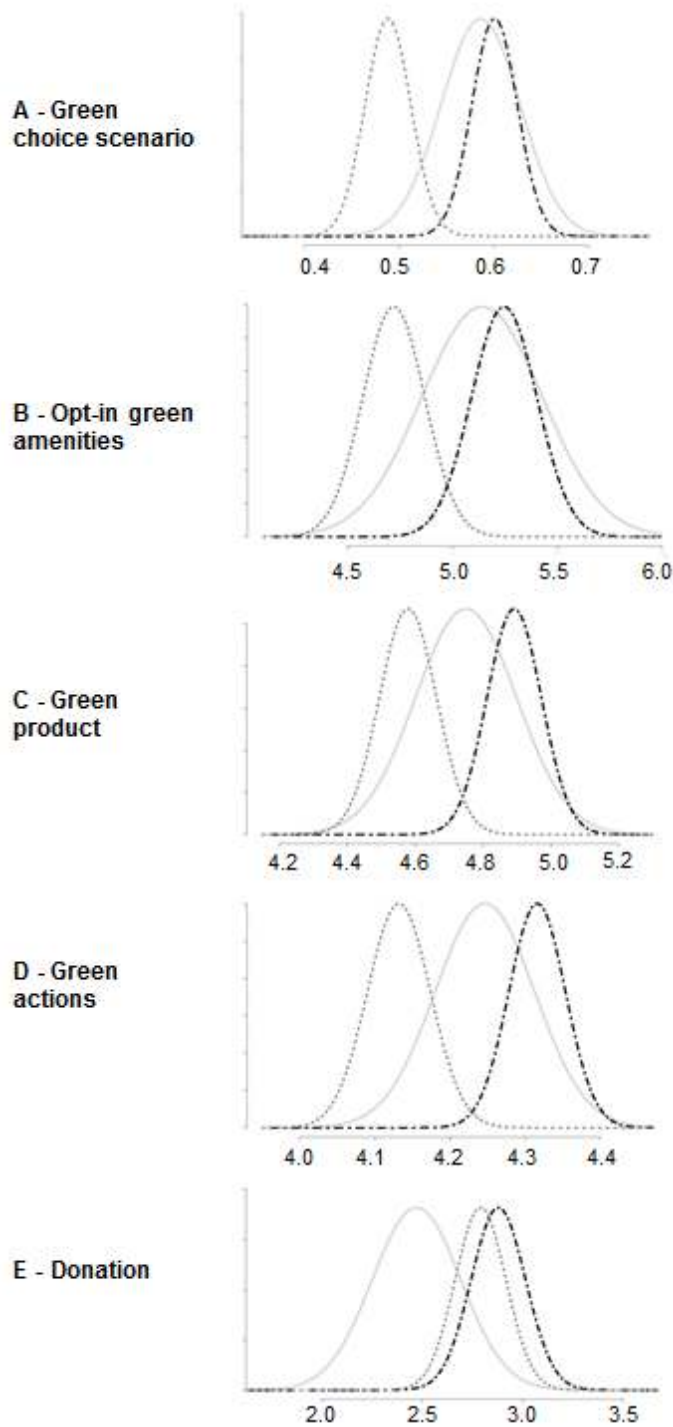
Results revealed a main effect of anticipated emotion (pride vs. guilt) across four of the five measures of environmental decision making. Figure 1 depicts the results of the aggregated anticipated pride induced groups and aggregated anticipated guilt induced groups, respectively. Overall, participants who were exposed to an anticipated pride induction consistently reported higher pro-environmental intentions compared to those exposed to an anticipated guilt induction. Compared to participants who anticipated guilt, those exposed to the anticipated pride induction were more likely to choose the green option in the choice scenario,  $b = -0.23$ ,  $z(844) = -3.28$ ,  $p = .001$ ; LR  $X^2(1) = 10.83$ ,  $p < .001$ ; select more green amenities for their apartments,  $F(1, 845) = 5.99$ ,  $p = .015$ ; were more likely to intend to buy a green product over the next month,  $F(1,844) = 7.17$ ,  $p = .008$ ; and intend to perform a range of green actions, as compared to the participants induced to anticipate guilt,  $F(1,845) = 10.58$ ,  $p = .001$ . Donation behavior did not reveal a similar pattern: Participants induced to anticipate pride did not donate significantly more than participants induced to anticipate guilt,  $F(1,844) = 0.23$ ,  $p = .632$ .



**Figure 1: Influence of pride and guilt inductions on pro-environmental behavior per outcome measure.** Figure 1 depicts four out of all five outcome measures that show a significant difference in pro-environmental behavior between those induced with pride and those induced with guilt. (A): Analysis of Deviance (Type III partition of the sums of squares); (B)-(D): Analysis of variance (Type III partition of the sums of squares). Y-axes: (A) = proportion of green choice; (B) = number of amenities chosen, range 0 to 14; (C) = intention to buy green product over next month, range 1 (not at all likely) to 7 (extremely likely); (D) = how often participant intends to perform a series of pro-environmental actions, range 1 (never) to 6 (all the time); (A): error bars denote binomial approximation of the standard error; (B)-(D): error bars denote standard error; Donation (not depicted):  $F = 0.23, p = .632$

Analysis of the control group revealed an interesting pattern. Across all four dependent measures of pro-environmental behavioral intention, descriptive results for the control group fall between those of the anticipated pride and guilt groups, with behavioral intentions for the anticipated pride group being higher than the control group, and behavioral intentions for the anticipated guilt group being lower than the control group. For the donation dependent measure, both anticipated pride and guilt groups lie above the

control group, with the anticipated pride group being higher than the anticipated guilt group. Figure 2 depicts the distributions for anticipated pride, anticipated guilt, as well as control groups.



**Figure 2: Density plots of anticipated pride, guilt, as well as control group distributions.** Y-axis: probability density; X-axis: (A) = proportion of green choice; (B) = number of amenities chosen, range 0 to 14; (C) = intention to buy green product over next month, range 1 (not at all likely) to 7 (extremely likely); (D) = how often participant intends to perform a series of pro-environmental actions, range 1 (never) to 6 (all the time); (E) = donation amount, range \$0 to \$10; legend: solid grey line = control group distribution, dotted dark grey line = guilt induction group distribution, black dotted-dashed line = pride induction group distribution.



These observed descriptive trends did not reach statistical significance. There was no statistically significant difference between the proportion of green choices in the choice scenario between the pride group (proportion green choices = .6) and control group (proportion green choices = .59;  $X^2(1) = .05, p = .827$ ) or the guilt group (proportion green choices = .49) and the control group ( $X^2(1) = 3.63, p = .057$ ). Likewise, there was no statistically significant difference between the number of green amenities chosen between the pride group ( $M = 5.25, SD = 3.18$ ) and the control group ( $M = 5.14, SD = 3.41; t(226.24) = -.32, p = .749$ ) or the guilt group ( $M = 4.72, SD = 3.07$ ) and the control group ( $t(217.04) = 1.3, p = .194$ ). Intentions to buy a green product over the next month did not significantly differ between the pride group ( $M = 4.89, SD = 1.64$ ) and the control group ( $M = 4.75, SD = 1.76; t(225.3) = -.84, p = .403$ ) or the guilt group ( $M = 4.58, SD = 1.75$ ) and the control group ( $t(234.99) = 1.0, p = .32$ ); neither did intentions to perform a range of green actions (pride group,  $M = 4.32, SD = .77$ , control group,  $M = 4.25, SD = .79; t(235.18) = -.91, p = .363$ ); guilt group,  $M = 4.13, SD = .87; t(259.33) = 1.46, p = .146$ ). Finally, donations did not significantly differ between the pride group ( $M = 2.88, SD = 2.76$ ) and the control group ( $M = 2.47, SD = 2.6; t(252.32) = -1.58, p = .116$ ), nor between the guilt group ( $M = 2.79, SD = 2.62$ ) and the control group ( $t(237.89) = -1.26, p = .21$ ).

## **Discussion**

The present work deepens and expands existing knowledge regarding the relationship between anticipated emotions and pro-environmental decision making. We find evidence that there are distinct differences in the effect on pro-environmental behavioral intentions when inducing people to anticipate the pride they would feel related

to pro-environmental action compared to the guilt they would feel from inaction. Notably, inducing people to anticipate feelings of pride for positive future actions appears to have a more powerful effect on pro-environmental motivation compared to prompting feelings of guilt for inactions. This core finding not only contributes to the literature by disentangling the divergent effects of anticipated pride and guilt on pro-environmental decision making and motivation, but it also challenges current pro-environmental messaging strategies, which favor inducing negative emotions such as guilt to promote mitigation behaviors. Guilt-arousing communications have received considerable attention in extant research, particularly in the context of green marketing communications, (e.g., Basil, Ridgway, & Basil, 2008; Block, 2005; Chun-Tuan, 2001; Jimenez & Yang, 2008). Guilt appeals are commonly used by social marketers as a persuasion tactic (Alden & Crowley, 1995; Basil et al., 2008; Bennett, 1998; Hibbert, Smith, Davies, & Ireland, 2007; Lindsey, 2005; O’Keefe, 2002). In fact, a content analysis of emotional appeals used for persuasion revealed that guilt appeals are used at a level comparable to that of other communication strategies (such a humor or sexual) and are most often employed by charities or health-related products (Huhmann & Brotherton, 1997).

Our results suggest that guilt arousing communications may be less effective in the domain of environmental conservation compared to pride arousing communications, at least in some contexts. How do we explain the relative advantage of anticipating pride over guilt that we observed in this study? One obvious explanation comes from the robust literature on reactance (Miller, 1976), which suggests that people respond poorly when told to feel badly about themselves for some perceived moral failing (Brehm, 1966).

Although the anticipation of guilt, when it happens, is indeed likely to result in positive behavior (Lu & Schult, 2015; Rees, Klug, & Bamberg, 2015), it seems likely that many efforts to induce such feelings fall flat or perhaps even boomerang, resulting in a lack of behavior change or possibly even retaliatory behavior. In line with this account, recent work has shown that negative affect-based messaging can lead to a decrease in pro-environmental spillover behaviors, i.e., a decreased likelihood of additional pro-environmental behaviors beyond the targeted ones (for a review, see Truelove, Carrico, Weber, Raimi, & Vandenbergh, 2014). Tauber, van Zomeren and Kutlaca (2015) review evidence that negative moral framing of persuasive messages, such as guilt frames, may constitute a threat to a person’s self-image and morality, and may hence lead to defensive reactions instead of the intended positive behavioral outcomes. In contrast, individuals are likely much less motivated to react poorly to inducements to feel proud about themselves, and thus the anticipation of such positive emotions is more likely to actually take root (and in turn motivate positive behavior).

A related body of research has explored the moderating conditions under which reactance may occur in the field of guilt appeals, which suggest that our results could be driven by the situational context of the decision. For example, Bessarabova, Turner, Fink, and Blustein (2015) suggest that the effect of guilt on reactance is mediated through the explicit awareness that messages use guilt to induce persuasion, which makes people infer an overt persuasive attempt regardless of the source’s intention. It is possible that our explicit anticipated guilt inductions contributed to feelings of reactance, but that more subtle anticipated guilt primes would more effectively promote pro-environmental action. Other work indicates that advantageous effects of guilt appeals are found when

promoting a highly proximal issue to people with low levels of environmental consciousness (Chang, 2012) or when including the presence of reparation suggestions (Graton, Ric, & Gonzalez, 2016); contextual features that were not present in our own inductions. Further studies explicitly testing the process of guilt-induced reactance will be useful in illuminating the underlying conditions under which an anticipated guilt induction triggers reactance. Although our evidence is indirect with respect to the moderators at work, our results confirm our hypothesis that inducing anticipating feeling proud of one's future mitigation efforts has a more positive effect on pro-environmental motivation relative to inducing anticipating feeling guilty for inaction.

In line with the presented literature, results comparing emotional induction effects to baseline behavior point towards a potentially reactance arousing effect of guilt appeals. While pride may increase target behavior above baseline behavior, guilt may dampen behavior below baseline levels. Although these results did not reach statistical significance, these trends are in line with the notion that guilt appeals may lead to reactance and subsequent decreases in desired behavior. Our study was designed and appropriately powered to detect differences between anticipated pride and guilt conditions as this comparison constitutes the main focus of this research. We included the control group to better understand how the anticipated pride and guilt groups relate to a baseline. Further research focusing on the baseline comparison is needed to investigate the observed relationships in more detail. Our current results suggest that pro-environmental messaging and campaigns that do utilize an emotional appeal should probably aim to induce anticipation of positive emotions rather than anticipation of negative emotions.

Our research also highlights a critical yet often unrecognized (within this domain, at least) distinction between treating emotional experiences as *antecedents* to behavior versus as *consequences* of action. Because extant literature in this domain has treated emotions nearly exclusively as mediating and moderating factors, investigating indirect effects on behavior rather than as causal antecedents to behavior, past work has not been able to identify the divergent effects of anticipating pride versus guilt on pro-environmental motivation. While people may experience guilt in response to making a non-environmentally friendly decision, as we show in our pilot study (see also Bissing-Olson et al., 2016) and while in theory these emotional experiences could be leveraged to promote sustainable behavior through the motivation to avoid experiencing guilt, it seems that trying to induce such considerations leads to lower levels of pro-environmental motivation compared to inducing pride considerations. Moreover, and perhaps even more damagingly in the long run, an incomplete understanding of how positive and negative emotions differentially motivate behavior has, it seems, led many advocates to the belief that negative emotions such as guilt are the more powerful levers for pro-environmental behavior change. Our results provide indications that this may not be the case and point to the urgency of investigating the effects of the use of anticipated emotions in environmental messaging further to avoid potential negative rebound effects. Further research should also test whether such interventions produce sustainable changes in actual behaviors over time. Indeed, changes in attitudes and self-reported behavior may not necessarily correspond to behavior change, depending on how closely the attitude in question corresponds to a target behavior (Ajzen & Fishbein, 1977). In future work, these issues could be more thoroughly explored through the use of additional methodological

frameworks, including in-person studies where real environmental actions, such as recycling behavior, can be observed.

## **Conclusion**

The question of what shapes pro-environmental behavior is complex, and strategies are needed to engender more intrinsic motivations through the use of experiential and psychological factors, including emotional response (American Psychological Association, 2009). Our work presents novel findings on the differential role of two specific anticipated emotions in shaping pro-environmental decision making and motivation, revealing important practical implications and opening up avenues for future research on effective intervention design. Our results contribute to efforts to clarify and disentangle the differential roles anticipated pride versus guilt play in shaping pro-environmental decision making. Findings may translate to other domains of prosocial behavior of public and applied interest as well, such as health behaviors or providing humanitarian aid. Our results point to a more beneficial role of anticipated pride compared to guilt in shaping pro-environmental motivation and furthermore highlight the need for careful assessment of communication and messaging strategies that employ emotional appeals, as effects may vary substantially depending on the emotion targeted. Policy makers, advocacy organizations and others would benefit from a more nuanced understanding of the impact of induced anticipated emotions on pro-environmental decision making and motivation, to leverage positive effects and avoid potential negative ones. Our results provide a first step towards this worthy end.

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## Supplementary Information

### Pilot Study

#### Supplementary Methods

A diverse sample of 545 U.S. participants, recruited through Amazon's Mechanical Turk, elected to participate in an online survey (see Supplementary Table 2 for demographic details). Participants were randomly presented with three out of ten possible environmental choice scenarios, each of which asked them to make a binary decision between a 'green' (pro-environmental) option and a 'brown' (non-environmentally friendly) option. The choice scenarios were presented in writing in the form of brief descriptive paragraphs. The ten scenarios presented trade-offs on a variety of dimensions, including social factors, effort, time, or financial cost (see section Supplementary Measures for a full list of scenario items). For example, the time/environmental trade-off scenario read:

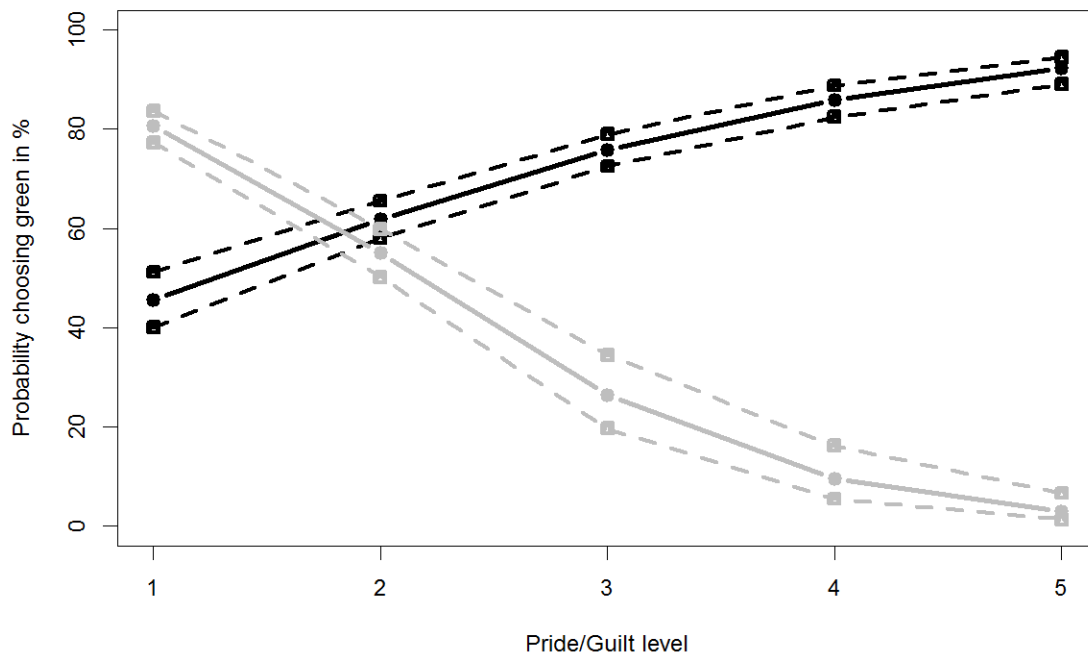
*Imagine that you need to get your car washed and waxed, and received a free online coupon to do so. You can choose to get the regular wash & wax (option A), or you can choose the eco-friendly wash & wax (option B), which uses less water and uses cleaning products that are organic and do not harm the environment. When you arrive at the car wash, you learn that the regular wash takes 15 minutes, while the eco-friendly wash & wax takes 45 minutes. Which option would you choose: The regular wash (option A) or the eco-friendly wash (option B)?*

After reading the scenario and choosing either the green or brown option, participants were asked to rate how much pride and guilt they felt during the decision making process. Participants were also asked to rate feelings of a range of other emotions (engaged, bored, torn, confident, angry, sad, pleased, regretful, satisfied), which served as fillers to distract from the two emotions of interest. Ratings were made on a 5-point Likert scale ranging from not at all to very strongly.

The relationship between reported pride/guilt ratings and choice outcome type (green vs. brown scenario) was assessed across the 10 choice scenarios. We used a multilevel mixed model approach including random and fixed effects to account for repeated measures within a participant, since each participant completed 3 out of 10 choice scenarios. Reported pride and reported guilt were entered as predictors of choice into two regression models, one using pride and one using guilt. Log odds parameter estimates were converted to probability estimations.

## Supplementary Results

As expected and consistent with findings by Bissing-Olson, Fielding and Iyer (2016), regression results revealed a positive relationship between the experienced level of pride and the likelihood of choosing the green option,  $b = 0.66$ , Wald's  $X^2(1) = 109.83$ ,  $p < .001$ . Higher levels of experienced pride were associated with a higher likelihood of choosing green. Conversely, and as predicted, we find a negative relationship between the experienced level of guilt and the likelihood of choosing the green option,  $b = -1.23$ , Wald's  $X^2(1) = 109.2$ ,  $p < .001$ . Supplementary Figure 1 visualizes these results. Results remained robust after controlling for a range of demographic variables (sex, age, education, political affiliation and income) as well as environmental attitude (see Supplementary Table 1).



**Figure S1. Relationship between experienced pride[guilt] and green choice;** X-axis denotes the 5 levels of the Likert-scale used to indicate pride and guilt levels; black data points = pride, grey data points = guilt; dashed lines denote binomial 95% confidence interval.

**Table S1. Regression table with controls.**

<b>All CS</b>		<b>Estimate</b>	<b>Std Error</b>	<b>z-value</b>	<b>p-value</b>
1	Pride	0.66	0.06	10.48	< .001 ***
2	Pride	0.55	0.06	9.65	< .001 ***
	Gender	0.26	0.13	2.03	.043 *
	Age	< 0.01	0.01	-0.2	.842
	Education	0.06	0.08	0.78	.437
	Republican (relative to other)	-0.44	0.16	-2.67	.008 **
	Income	-0.14	0.05	-3.20	.001 **
	Care for the environment	0.67	0.08	8.44	< .001 ***
3	Guilt	-1.23	0.12	-10.45	< .001 ***
4	Guilt	-1.10	0.11	-10.10	< .001 ***
	Gender	0.31	0.13	2.30	.022 *
	Age	-0.01	0.01	-1.27	.206
	Education	0.02	0.08	0.22	.823
	Republican (relative to other)	-0.35	0.17	-2.07	.038 *
	Income	-0.10	0.05	-2.25	.024 *
	Care for the environment	0.82	0.08	9.75	< .001 ***

Note: Model 1 + 3 n=545 (1635 observations), Model 2 + 4 n=534 (1602 observations)

**Table S2. Demographic characteristics of the study sample (Pilot Study).**

Variable	Pilot Study ( <i>N</i> = 545)
Gender, %	
Females	53.03
Males	45.69
Age, <i>M</i> ( <i>SD</i> )	36.83 (11.27)
Education, %	45.14
Income, %	37.43
Race/ethnicity, %	
White	78.35
Polit. Affiliation, %	
Democrat	36.33
Republican	17.25
Independent/Other	46.06

Note: Due to some participants choosing not to answer, the gender and political affiliation columns do not total to 100.

\*Educational Attainment = *at least some college*.

\*Household income in 2013 (Pilot Study) / 2014 (Experimental Study) = *\$50,000 or over*

All participants had a 97% or higher approval rating according to the screening procedures of Amazon's Mechanical Turk.

## Supplementary Measures

### List of Choice Scenarios

#### Scenario 1: Cost1

Imagine that you are the mayor of a major city. Your city council has decided to replace the municipality's fleet of vehicles, which are all old and starting to break down regularly. However, the council is split 50/50 on what type of cars to buy to replace the old ones. Half of the council wants to buy environmentally friendly, highly fuel-efficient cars (such as hybrid vehicles), which are much better for the environment, and reduce local air pollution by reducing vehicle emissions. However they are also significantly more costly. The other half of the council wants to purchase cheaper but less fuel efficient vehicles, freeing up that money to be put to other "better" uses right away, although the specific uses of that money have not yet been determined. At the next council meeting, you will have to cast the deciding vote about which type of car to purchase in replacing the municipality's fleet. Which option will you choose: the hybrid vehicles (Option A) or the regular vehicles (Option B)?

- ☐ Option A
- ☐ Option B

#### Scenario 2: Cost1Table

Imagine that you are the mayor of a major city. Your city council has decided to replace the municipality's fleet of vehicles, which are all old and starting to break down regularly. However, the council is split 50/50 on what type of cars to buy to replace the old ones. Half of the council wants to buy environmentally friendly, highly fuel-efficient cars (such as hybrid vehicles), which are much better for the environment, and reduce local air pollution by reducing vehicle emissions. However they are also significantly more costly. The other half of the council wants to purchase cheaper but less fuel efficient vehicles, freeing up that money to be put to other "better" uses right away, although the specific uses of that money have not yet been determined. At the next council meeting, you will have to cast the deciding vote about which type of car to purchase in replacing the municipality's fleet.

	Option A (hybrid)	Option B (regular car)
Price (per vehicle)	\$35,000	\$22,500
Miles per gallon (MPG)	45	27
Amount of exhaust particles	Far below average	Average
Safety index	+++	+++
design	A+	A+

Which option will you choose: the hybrid vehicles (Option A) or the regular vehicles (Option B)?

- ☐ Option A
- ☐ Option B



### Scenario 3: Cost2

Imagine you are about to design and build your next home. You have to decide what kind of heating system to install. You have a choice between two types of systems: a natural gas heating system or a geothermal energy system. The natural gas heating system is worse for the environment since it makes use of a finite fossil combustible component – gas. Geothermal energy is clean, good for the environment, and infinite. However, installation costs for the geothermal system are approximately 30% higher than installation costs for the more traditional gas system. Which system would you choose: A natural gas heating system (System A) or a geothermal energy system (System B)?

- ☐ System A
- ☐ System B

### Scenario 4: Cost2Table

Imagine you are about to design and build your next home. You have to decide what kind of heating system to install. You have a choice between two types of systems: a natural gas heating system or a geothermal energy system. The natural gas heating system is worse for the environment since it makes use of a finite fossil combustible component – gas. Geothermal energy is clean, good for the environment, and infinite. However, installation costs for the geothermal system are approximately 30% higher than installation costs for the more traditional gas system.

	System A (natural gas)	System B (geothermal)
Initial costs	low	high
Running costs	high	low
Energy output	high	high
Sustainability index	4 out of 10	9 out of 10

Which system would you choose: A natural gas heating system (System A) or a geothermal energy system (System B)?

- ☐ System A
- ☐ System B

### Scenario 5: Social\_NT

Imagine you need to purchase new furniture for your home. You are torn between a sofa made out of bamboo fabrics and a sofa made with more traditional fabrics. The bamboo sofa is a sustainable material and very environmentally friendly, however it only comes in somewhat outdated styles. The regular sofa is produced using bleaches, chemicals and synthetic fabrics, but comes in many modern styles. All other relevant factors (such as price, comfort and durability) are the same. Which option would you rather choose: The sofa made out of bamboo fabrics (option A) or the sofa made of traditional fabrics (option B)?

- ☐ Option A

- ☐ Option B

### Scenario 6: SocialTable

Imagine you need to purchase new furniture for your home. You are torn between a sofa made out of bamboo fabrics and a sofa made with more traditional fabrics. The bamboo sofa is a sustainable material and very environmentally friendly, however it only comes in somewhat outdated styles. The regular sofa is produced using bleaches, chemicals and synthetic fabrics, but comes in many modern styles. All other relevant factors (such as price, comfort and durability) are the same.

	Option 1 – bamboo	Option 2 - regular
Comfort	Comfortable	Comfortable
Style	Outdated	Modern
Price	\$2,000	\$2,000
Chemicals used in production	Few	Many
Sustainability	High	Low

Which option would you rather choose: The sofa made out of bamboo fabrics (option 1) or the sofa made of traditional fabrics (option 2)?

- ☐ Option 1  
☐ Option 2

### Scenario 7: Time

Imagine that you need to get your car washed and waxed, and received a free online coupon to do so. You can choose to get the regular wash & wax (option A), or you can choose the eco-friendly wash & wax (option B), which uses less water and uses cleaning products that are organic and do not harm the environment. When you arrive at the car wash, you learn that the regular wash takes 15 minutes, while the eco-friendly wash & wax takes 45 minutes. Which option would you choose: The regular wash (option A) or the eco-friendly wash (option B)?

- ☐ Option A  
☐ Option B

### Scenario 8: Building

Imagine you are the building manager of a large office block and you have to decide which heating policy to implement. You could regulate the maximum temperature of all heaters to not exceed a specified temperature. This would be good for the environment since it will regulate energy use and prevent waste. However, at times people might feel a bit cold and will have to put on an additional sweater. Alternatively, each heater could be regulated separately in each office and without temperature limits. In this case, people would always be cozy. However, a lot of energy might be used and potentially wasted (especially if people forget to turn their heat off at

the end of the day). Which policy would you decide to implement: Temperature regulation (Option A) or unlimited self-regulation of temperature (Option B)?

- ☐ Option A
- ☐ Option B

### **Scenario 9: Kitchen**

Imagine you are the CEO of a company and have to decide which policy to implement concerning the staff kitchen area. One option is to provide Styrofoam cups, which don't require a lot of effort for the employees since they can simply be thrown out. However, they are also bad for the environment because they never decompose. Another option is to implement a "bring your own mug" policy, which would involve creating a rotating system of responsibility for filling the office dishwasher, letting it run at the end of the work day, and emptying it out the next day, which constitutes a significant amount of effort for your employees. However, this policy would be much better for the environment by reducing waste. Which option would you choose to implement: Providing Styrofoam cups (option A) or reusable mugs (option B)?

- ☐ Option A
- ☐ Option B

### **Scenario 10: Benefits**

Imagine that you are the CEO of a small start-up company that is deciding whether to enact environmentally friendly practices. These include installing eco-friendly lighting fixtures and appliances, and using more expensive, organic office cleaning supplies. However, putting these measures in place would be quite costly for your small company, and would mean workers would have to forgo the free lunch you were planning to provide every Friday. Which option would you choose: Putting environmentally friendly practices into place (option A) or offering free Friday lunches (option B)?

- ☐ Option A
- ☐ Option B

## Experimental Study

### Supplementary Results

#### Statistical analysis anticipated emotion x induction type

As described in the manuscript, we used a 2 (anticipated emotion: pride vs. guilt) x 3 (induction type: OS vs. AF vs. WP) between-participants factorial design, with separate models (ANOVAs, using a type III partition for the sums of squares) for each of the continuous dependent variables (opt-in, behavioral intentions, donation) and logistic regression for the categorical dependent variable (social choice scenario). To test that effects did not differ across induction methods, the models assessed the effects of the three induction methods, as well as differences in the effect of anticipated pride versus guilt, as well as potential interactions between induction method and the two types of anticipated emotions. As expected, analyses did not reveal a consistent main effect of induction method nor consistent interactions between emotional treatment and induction method, suggesting that observed effects should not depend on one specific induction method. Please refer to the ANOVA tables below for detailed statistical results.

#### A – Green choice scenario:

	<i>df</i>	LR $X^2$	<i>p</i>
induction type	2	4.64	.1
emotion	1	11.05	< .01
induction type * emotion	2	.17	.92

#### B – Opt-in green amenities:

	<i>df</i>	<i>SS</i>	<i>F</i>	<i>p</i>
induction type	2	35.1	1.81	.16
emotion	1	55	5.68	.02
induction type * emotion	2	71.8	3.7	.03

**C – Green product:**

	<i>df</i>	<i>SS</i>	<i>F</i>	<i>p</i>
induction type	2	2.5	.43	.65
emotion	1	20.5	7.09	< .01
induction type * emotion	2	.4	.07	.94

**D – Green actions:**

	<i>df</i>	<i>SS</i>	<i>F</i>	<i>p</i>
induction type	2	6	4.43	.01
emotion	1	7.2	10.75	< .01
induction type * emotion	2	1.1	.81	.44

**E – Donation:**

	<i>df</i>	<i>SS</i>	<i>F</i>	<i>p</i>
induction type	2	58	4.03	.02
emotion	1	2.1	.29	.59
induction type * emotion	2	13.8	.96	.38

**Table S3. Demographic characteristics of the study sample (Experimental Study).**

Variable	Experimental Study ( <i>N</i> = 987)
Gender, %	
Females	46.81
Males	52.68
Age, <i>M</i> ( <i>SD</i> )	34.82 (11.1)
Education, %	43.06
Income, %	40.02
Race/ethnicity, %	
White	73.45
Polit. Affiliation, %	
Democrat	42.96
Republican	14.39
Independent/Other	42.55

Note: Due to some participants choosing not to answer, the gender and political affiliation columns do not total to 100.

\*Educational Attainment = *at least some college*.

\*Household income in 2013 (Pilot Study) / 2014 (Experimental Study) = *\$50,000 or over*

All participants had a 97% or higher approval rating according to the screening procedures of Amazon's Mechanical Turk.

## **Supplementary Measures**

### **Description of induction methods**

#### **One sentence reminder (OS):**

Pride:

As you make your decisions, keep in mind that you might feel proud about your decisions and the alternatives you have picked

Guilt:

As you make your decisions, keep in mind that you might feel guilty about your decisions and the alternatives you have picked.

#### **Affective forecasting (AF):**

##### **Scenario 1:**

Imagine that you are the head of a small start-up company that is deciding whether or not to enact environmentally friendly practices. These include providing recycling bins throughout the office and introducing a reusable mug policy in the staff kitchen area. Recycling reduces waste that has to be burned and conserves resources. Reusable mugs avoid the use of Styrofoam cups which are bad for the environment since they never decompose. However, if you choose to enact green practices you have to stay 10min longer at the end of the day each day to ensure that the dishwasher is loaded and started and you have to get to work 15min earlier every day to make sure that the recycling bins are set up properly and to unload the dishwasher. If you stick with the regular trash bins and the Styrofoam cups in the staff kitchen, you would not have to spend the extra time.

Pride:

Imagine you choose to enact green practices by providing recycling bins and introducing a reusable mug policy. How proud would you feel after having made this decision?

[9-point scale: not at all proud - extremely proud]

Guilt:

Imagine you choose to stick with using regular trash bins and Styrofoam cups. How guilty would you feel after having made this decision?

[9-point scale: not at all guilty - extremely guilty]

##### **Scenario 2:**

Imagine that you are buying a new car. You could buy an environmentally friendly, highly fuel-efficient car (such as a hybrid vehicle), which is much better for the environment, and reduces local air pollution by reducing vehicle emissions. However this type of vehicle is also significantly more costly. Or you could purchase a cheaper but less fuel efficient vehicle, freeing up that money to be put to other “better” uses right away.

Pride:

Imagine you choose the hybrid vehicle. How proud would you feel after having made this decision?

[9-point scale: not at all proud - extremely proud]

Guilt:

Imagine you choose the cheaper, less fuel-efficient vehicle. How guilty would you feel after having made this decision?

[9-point scale: not at all guilty - extremely guilty]

### Scenario 3-5:

For the next set of questions, we want you to consider that you are shopping for three products: (a) a dishwasher, (b) a household cleaner, and (c) a backpack.

### Scenario 3:

Imagine that you are out shopping for a dishwasher, and you are choosing between two kinds. Below are brief descriptions of the two products that you are choosing between. Please read them carefully.

#### PRODUCT A

##### **Sub-Zero ED40 Elite Dishwasher (\$1,100)**

- Comes in choice of stainless steel or white exterior with black chrome trim
- Features a revolutionary heated drying system that eliminates water spots
- Has powerful water sprays but produces no sound

#### PRODUCT B

##### **Sub-Zero Eco-Friendly Dishwasher (\$1,100)**

- Has a standard 40-minute running cycle
- Uses a recirculating water system to save water
- Is made with recycled components

Pride:

Now imagine that you choose to select the Sub-Zero Eco-Friendly Dishwasher. Imagine how proud you would feel having made this decision. On the scale below, indicate the level of pride you predict you would feel.

[9-point scale: not at all proud - extremely proud]

Guilt:

Now imagine that you choose to select the Sub-Zero ED40 Elite Dishwasher. Imagine how guilty you would feel having made this decision. On the scale below, indicate the level of guilt you predict you would feel.

[9-point scale: not at all guilty - extremely guilty]



#### Scenario 4:

Imagine that you are out shopping for a household cleaner, and you are choosing between two types. Below are brief descriptions about the two cleaners that you are choosing between. Please read them carefully.

##### PRODUCT A

###### **Lysol Industrial Strength Household Cleaner (\$7)**

- Awarded most effective cleaner on the market award
- Chemically engineered to cut through the toughest grease, rust and mold
- Kills 99.9% of germs on contact

##### PRODUCT B

###### **Lysol Natural Household Cleaner (\$7)**

- Made from biodegradable nontoxic materials
- Contains no acids, dyes, or harsh chemicals
- Not tested on animals

#### Pride:

Now imagine that you choose to select the Lysol Natural Household Cleaner. Imagine how proud you would feel having made this decision. On the scale below, please indicate the level of pride you predict you would feel.

[9-point scale: not at all proud - extremely proud]

#### Guilt:

Now imagine that you choose to select the Lysol Industrial Strength Household Cleaner. Imagine how guilty you would feel having made this decision. On the scale below, please indicate the level of guilt you predict you would feel.

[9-point scale: not at all guilty - extremely guilty]

#### Scenario 5:

Imagine that you are out shopping for a backpack, and you are choosing between two kinds. Below are brief descriptions of the two backpacks that you are choosing between. Please read them carefully.

##### PRODUCT A

###### **North Face Ultra-Strength backpack (\$64)**

- Contains eight different storage compartments for maximum versatility
- Stylish design crafted with water-resistant coating
- Solid construction lasts twice as long as the next leading brand on the market

##### PRODUCT B

###### **North Face Eco-Life backpack (\$64)**

- Made from 100% organic and recycled fibers
- Utilitarian design minimizes waste in the construction process
- Comes with instructions on how to recycle the backpack when you are done with it

#### Pride:

Now imagine that you choose to select the North Face Eco-Life backpack. Imagine how proud you would feel having made this decision. On the scale below, please indicate the level of pride you predict you would feel.

[9-point scale: not at all proud - extremely proud]

**Guilt:**

Now imagine that you choose to select the North Face Ultra-Strength backpack. Imagine how guilty you would feel having made this decision. On the scale below, please indicate the level of guilt you predict you would feel.

[9-point scale: not at all guilty - extremely guilty]

**Writing task (WT):**

**Pride:**

How proud would you feel?

For this writing task, we would like you to think about a decision in the future where your choice could make you feel proud. This real decision should occur in the next few months. Examples of decisions that might make you feel proud include deciding to donate blood, deciding to volunteer in a soup kitchen, or deciding to do someone a big favor like helping a friend move. Please think carefully about this. Then, in the space below, please write a brief essay describing the pride you would feel for having made a certain decision. Please tell us about the decision you have in mind and how proud you might feel about the decision once you have made it. Why do you think you would feel proud? This essay should take you approximately 5 minutes to complete.

Please write your response in the space provided below:

**Guilt:**

How guilty would you feel?

For this writing task, we would like you to think about a decision in the future where your choice could make you feel guilty. This real decision should occur in the next few months. Examples of decisions that might make you feel guilty include deciding not to donate blood, deciding not to volunteer in a soup kitchen, or deciding not to do someone a big favor like helping a friend move. Please think carefully about this. Then, in the space below, please write a brief essay describing the guilt you would feel for having made a certain decision. Please tell us about the decision you have in mind and how guilty you might feel about the decision once you have made it. Why do you think you would feel guilty? This essay should take you approximately 5 minutes to complete.

Please write your response in the space provided below:

## Description of outcome measures

### A – Social choice scenario:

Imagine you need to purchase new furniture for your home. You are torn between a sofa made out of bamboo fabrics and a sofa made with more traditional fabrics. The bamboo sofa is a sustainable material and very environmentally friendly, however it only comes in somewhat outdated styles. The regular sofa is produced using bleaches, chemicals and synthetic fabrics, but comes in many modern styles. All other relevant factors (such as price, comfort and durability) are the same. Which option would you rather choose: The sofa made out of bamboo fabrics (option A) or the sofa made of traditional fabrics (option B)?

- ☐ Option A  
☐ Option B

### B – Opt-in green amenities (adapted from Steffel et al., 2016):

Imagine that you are moving into a new apartment complex and have the option of choosing which of 14 environmentally friendly, ‘green’ amenities that you would like to have installed in your apartment. None of the green amenities are already included in the standard rent, but if you would like any of the green amenities to be installed, the landlord would add a small amount (\$3 dollars) to your monthly rent for each amenity that you choose to add. Please check which of the green amenities below you would install in this scenario (you may choose multiple):

- ☐ Energy-star furnace & air-conditioner  
☐ Tankless water-heater  
☐ Programmable thermostat  
☐ Storm windows and doors  
☐ Airflow-adjusting ceiling fans  
☐ UV filter film on windows  
☐ Energy-efficient dishwasher and refrigerator  
☐ Compact Florescent (CFL) light bulbs  
☐ Energy-efficient washer & dryer  
☐ Dimmer switches for indoor lighting  
☐ Low-flow toilets  
☐ Solar-powered outdoor lighting  
☐ Low-flow faucets & shower heads  
☐ Motion sensors for outdoor lighting

### C – Intention to buy green product (adapted from Zaval, Markowitz & Weber, 2015):

How likely are you to buy a green (environmentally-friendly) product next month?  
[7 point scale, not at all likely – extremely likely]

### D – Intention to perform green actions ( $\alpha = 0.55$ ; stand. $\alpha = 0.57$ ; adapted from Zaval, Markowitz & Weber, 2015):

Please indicate how often you intend to perform the following behaviors over the next month:

	Never	Very infrequently	Once in a while	Sometimes	Often	All the time
Turn off lights whenever leaving a room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wait until I have a full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

load before doing my laundry						
Recycle used paper at home or work/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take showers that are 5 minutes or less	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use public transportation or carpool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unplug appliances and chargers (e.g., TV, cell phone, computer) at night	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**E – Donation** (adapted from Zaval, Markowitz & Weber, 2015):

As an extra "thank you" for participating in our research today, we will enter you into a lottery to win a \$10 bonus. One study participant will be chosen at random to receive this bonus (which will be given to you via MTurk). We also would like to give you an opportunity to donate some or all of the bonus to a charitable organization, if you are the lottery winner. You may split the \$10 between yourself and the charity however you want to, using the form on the next page. Any money you allocate to the charity will be directly donated on your behalf by the research team. The charity you may donate to today will be shown on the next page.

The organization you have an opportunity to donate to today is called Trees for the Future, whose motto is "Plant trees. Change Lives." Since 1989, Trees for the Future has helped communities in 19 countries around the world plant millions of trees. Their work has and will continue to improve the well-being of children and families for generations to come, by cleaning the air, reducing risks from landslides and reducing deforestation. If you'd like to learn more about the organization, their website is: <http://www.treesforthefuture.org>



Please note that the total amount must add up to exactly \$10. Remember that you will be paid your MTurk compensation regardless of whether you win the lottery or not.

\_\_\_\_\_ Donate to Trees for the Future

\_\_\_\_\_ Keep for myself

PAPER II: Values affirmation can motivate prosocial action by leveraging positive self-regard

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## **Abstract**

Prosocial behavior is of critical importance to help address global social, environmental, and economic challenges. Yet, humans often do not act with the benefit of others in mind, especially when those others are distant and unknown. We suggest that a failure to act prosocially may in part stem from cognitive and emotional capacity limitations and that an intervention which reduces worry about the self and thereby increases available resources may foster prosociality. In this paper, we assess the potential of a values affirmation intervention to fulfill this role. Starting from self-affirmation theory which posits that affirming the self can establish self-integrity, we propose that positive self-regard may act as a mediator in the relationship between the affirmation intervention and prosociality. Across two studies we assess the effects of a values affirmation intervention on prosocial behavioral intentions as well as actual prosocial behavior and formally test positive self-regard as a mediator. We find that compared to control participants, affirmed participants display greater willingness to volunteer time and exhibit increased actual prosocial behavior by completing an unpaid study and donating real money to charity. Furthermore, as hypothesized, we find evidence that increases in positive self-regard mediate the effect of values affirmation on prosocial intentions as well as behavior. Our proposed line of theorizing on the affirmation effect regarding resource availability offers an explanation for the observed mediation, i.e., how enhanced positive self-regard may translate into downstream prosocial action. Our results make both theoretical and applied contributions. We advance psychological theory by helping to shed light on the mechanism that underlies values affirmation intervention effects in this context. Furthermore, we extend research on the applicability of values affirmation as a tool to

promote prosociality. Our results are of practical societal value by providing evidence for the potential of values affirmation to promote prosocial actions in the real world.

Values affirmation can motivate prosocial action by leveraging positive self-regard

## **Introduction**

Prosocial behavior can help to address pressing social, environmental, and economic challenges humans face, such as poverty and inequality, environmental sustainability, and intergroup conflict, through concern for the well-being of others. However, despite the relevance and importance of prosocial behavior, humans often do not behave with the benefit of others in mind, especially when those others are distant and unknown (e.g., Burnstein, Crandall, & Kitayama, 1994; Dawes, van de Kragt, & Orbell, 1988; Maner & Gailliot, 2007; Neyer & Lang, 2003). Developing strategies that promote prosociality is thus of critical importance.

Prosocial behaviors are acts that are beneficial to other people (Penner, Dovidio, Piliavin, & Schroeder, 2005), such as protecting and promoting the well-being of others (Grant & Berg, 2012; Schwartz & Bilsky, 1990). They can stem from entirely selfless motivations without expectation of personal benefits (altruistic behaviors) or they can be motivated by mutual benefits or benefits for a group, such as cooperation and collective action (Batson, 1987; Batson & Powell, 2003; Batson & Shaw, 1991; Keltner, Kogan, Piff, & Saturn, 2014; Penner et al., 2005; Schultz & Zelezny, 1998; Schwartz & Howard, 1984; van Zomeren, 2013). A wide range of behaviors can therefore be described as prosocial actions, such as interpersonal helping and support behavior, comforting, sharing, cooperating, collective action, volunteering one's time, or charitable giving (Batson & Powell, 2003; Keltner et al., 2014; Penner et al., 2005). The unifying element is that all involve an action that helps or benefits others (Weinstein & Ryan, 2010).



Evolutionary biology posits that humans are inclined to be prosocial. We share food, divide labor, cooperate and help each other (Axelrod & Hamilton, 1981; Gintis, 2000; Keltner et al., 2014; Silk & House, 2011). Contemporary neo-Darwinism models of evolution postulate that humans have a genetically grounded disposition to act prosocially and engage in prosocial behavior because of the evolutionary success of people who displayed such dispositions (Keltner et al., 2014; Penner et al., 2005). Engaging in prosocial behaviors such as reciprocal altruism, i.e., helping of unrelated individuals and in turn having favors repaid, can be beneficial (McCullough, Kimeldorf, & Cohen, 2008; Trivers, 1971). Humans care about reciprocity (Falk & Fischbacher, 2006; Gouldner, 1960) and engage in direct and indirect reciprocity (Rand & Nowak, 2013). People are more likely to help those who offer help (Boster, Fediuk, & Kotowski, 2001). An altruistic and cooperative reputation may also engender future benefits from third parties (Rand & Nowak, 2013; Simpson & Willer, 2008). Work on cooperative behavior in economic games has proposed that humans are intuitively cooperative because such behavior is typically advantageous in daily life (Rand, Greene, & Nowak, 2012). Economics, on the other hand, takes a different view on human nature, focusing instead on selfish utility maximization (Holmes, Miller, & Lerner, 2002; Mueller, 1986). For rational choice theorists, self-interest is the cardinal human motive for action (Holmes, Miller, & Lerner, 2002; Mueller, 1986). A cost-reward approach to helping behavior is in line with economic considerations of rational choice: people are motivated to maximize their benefits and to minimize their costs. It thus takes a perspective that humans are primarily concerned with their own self-interest (Penner et al., 2005). The reality probably lies somewhere in between. Humans clearly have prosocial and other-

regarding preferences, but often do not behave with the benefit of others in mind, especially when those others are distant and unknown (e.g., Burnstein, Crandall, & Kitayama, 1994; Dawes, van de Kragt, & Orbell, 1988; Maner & Gailliot, 2007; Neyer & Lang, 2003).

An important factor limiting prosociality is that it can be costly to the self (Dovidio, 1984; Gneezy, Imas, Brown, Nelson, & Norton, 2012; Rand, Greene, & Nowak, 2012; Rand & Nowak, 2013; Simpson & Willer, 2008). Research on the effects of personal costs on helping behavior finds that as personal costs increase, helping decreases (see Dovidio, 1984 for a review). Personal costs can occur in the psychological as well as material domains. Investing personal resources, such as time, effort, worry about others, or money decreases resources left for the individual. This is problematic in light of the fact that humans have only finite resources, physiologically, cognitively, and socially (Linville & Fischer, 1991). We only have a ‘finite pool of worry’ (Linville & Fischer, 1991; Weber, 2006), i.e., our capacity for worry and concern is limited. In the domain of climate science, Hansen, Marx, and Weber (2004) report that as concern for climate variability in Argentine farmers increased, concern about other risks decreased, pointing to the fact that concern and worry are finite resources. Weber (2006) suggests that increased concern about terrorism post 9/11 in the U.S. resulted in a decrease in concern in other areas, such as environmental degradation. Other findings in cognitive psychology show that humans have only finite attentional resources (Pashler, 1989, 1994, 1998; Pashler, Johnston, & Ruthruff, 2001). Likewise, work in behavioral economics has shown that humans only have limited resources to be rational decision makers (Simon, 1972, 1990), since we are bounded by limitations of information-gathering and

computational capacity. Another parallel stems from work by Mani, Mullainathan, Shafir, and Zhao (2013), who argue that preoccupation with poverty reduces the cognitive and emotional resources of the poor, making them more myopic (see also Mullainathan & Shafir, 2013).

Humans hence need to divide their psychological and material resources across the multiple goals and needs they have. In this process not all goals receive equal priority. Maslow (1943) describes human needs to be arranged in “hierarchies of pre-potency” (p. 370). He suggests that only once a more pre-potent, (i.e., pre-dominant) need is satisfied the next can be tackled. Costly prosociality, especially towards distant and unknown others, may not receive preference in the allocation of resources over personal and self-related goals and needs.

One of the most fundamental self-directed human needs is establishing and maintaining a positive self-image. Much work in psychology supports the notion that humans have a fundamental need to maintain a positive view of themselves (Epstein, 1973; Heine, Lehman, Markus, & Kitayama, 1999; Leary, Tambor, Terdal, & Downs, 1995). In fact, it was described as “easily the most common and consensually endorsed assumption in research on the self” (Heine et al., 1999, p. 766). Claude Steele describes it as the need to “maintain a phenomenal experience of the self” (Steele, 1988, p. 262), that is positive self-conceptions and self-image. Maslow (1943) likewise points to the importance of the human need for a high evaluation of the self and self-respect.

These perspectives illustrate the tremendous importance a positive self-image carries for humans. Pursuing and fulfilling this important chronic goal takes up resources. Yet, as outlined above, these limited resources are also needed for the capacity to worry

about others and engage in prosociality. Therefore, a lack of prosociality may be in part explained by a lack of resources. If we worry about the self, we may not have resources left anymore to worry about others. Support for this proposition can be found in research on the effects of psychological state on helping behavior. It has been shown that people who are in a positive self-state (e.g., ‘egocentric joy’) are more likely to help others compared to people who are in a negative self-state (e.g., ‘egocentric sadness’) (Rosenhan, Salovey, & Hargis, 1981; see also Dovidio, 1984 for a review). Following the presented line of reasoning it could be suggested that people who are in a negative self-state, e.g., depressed, and consumed with worry about the self, do not have the psychological resources to engage in prosocial action. We therefore propose that an intervention which allows people to satisfy the need for a positive self-image may foster prosociality by freeing up resources that can be dedicated to other uses, such as worry and care about others, allowing for prosociality.

### **Values affirmation to foster a positive self-image**

Self-affirmation theory (Steele, 1988) may provide a way of achieving this goal. According to Steele, maintaining the much needed ‘phenomenal experience of the self’ can be achieved through self-affirmation processes (Steele, 1988). Affirming the self has been described as an act that demonstrates one’s adequacy and self-integrity to oneself (Cohen & Sherman, 2014; Steele, 1988), allowing to secure a sense of being good and self-determining (Nelson, Fuller, Choi, & Lyubomirsky, 2014; Sherman & Cohen, 2006; Steele, 1988). One suggested way to achieve this sense of adequacy is by actively affirming an aspect of one’s self-concept deemed important to oneself (McQueen & Klein, 2006).

One of the most studied experimental manipulations to affirm the self is to have participants reflect on important personal values (Cohen & Sherman, 2014; McQueen & Klein, 2006; Steele & Liu, 1983). This way of affirming the self is referred to in the literature as values affirmation. Personal values are desirable personal qualities (Rokeach, 1973, p. 7). They are internalized standards which people use to evaluate their selves (Cohen & Sherman, 2014; Rokeach, 1973). Thus, affirming important personal values is intimately tied to the concept of maintaining a positive self-image. It is plausible that through the process of self-affirmation a person's mental resources can be reallocated. If the affirmation allows people to establish a positive self-image, thus fulfilling this crucial need, humans may have resources available to pursue other goals and behaviors, such as engaging in prosocial behavior.

Positive effects of self-affirmation interventions benefiting the individual have been demonstrated in various domains. For instance, in academic settings values affirmations have been shown to boost performance in situations of stereotype threat (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009) and problem-solving skills in underperforming individuals (Creswell, Dutcher, Klein, Harris, & Levine, 2013). In the health domain, affirmation interventions have been shown to foster positive health behavior change (Epton & Harris, 2008; Logel & Cohen, 2012; Sherman & Cohen, 2006) and increased physical activity (Cooke, Trebaczyk, Harris, & Wright, 2014). Other effects of self-affirmation interventions include increased receptiveness to opposing political views (Cohen, Aronson, & Steele, 2000), enhanced self-control (Schmeichel & Vohs, 2009), and improved quality of an apology in interpersonal relations (Schumann, 2014). Lastly, self-affirmation

interventions have been shown to have positive effects on well-being (Nelson et al., 2014; Ryan & Deci, 2001), with affirmed participants sustaining well-being longer compared to control groups (Armitage, 2016).

### **Mechanism underlying affirmation effects**

Despite the large body of research offering positive results in various domains and thus pointing to the benefits of self-affirmation interventions, evidence of the underlying mechanism is lacking (Crocker, Niiya, & Mischkowski, 2008; McQueen & Klein, 2006; Sherman & Cohen, 2006). In their recent meta-analysis of self-affirmation research, Epton, Harris, Kane, van Koningsbruggen, and Sheeran (2015) state that the literature is still lacking formal tests of what variables mediate the effect of self-affirmation to establish a theoretical account of the mechanism. Despite the theoretical links between self-affirmation and positive self-evaluations which self-affirmation theory posits, there is little research that formally tests this suggested mediating relationship on self-affirmation outcomes. Nelson et al. (2014) theorize strengthened self-image as a potential mediator in observed affirmation effects on well-being, but do not directly test it in their studies. Several studies have suggested self-esteem as a mediator (Galinsky, Stone, & Cooper, 2000; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999; Schmeichel & Martens, 2005). However, no coherent and reliable conclusions can be drawn from the empirical evidence for this link in the literature (McQueen & Klein, 2006). Studies have mostly focused on investigating self-esteem as a dependent measure without engaging in formal mediation analysis. Of those, neither Schmeichel and Martens (2005) nor Galinsky et al. (2000) find an effect of the affirmation intervention on state self-esteem. However, it is important to note that in Galinsky et al. (2000) the self-esteem measure was not assessed

directly after the affirmation intervention but was preceded by other measures which could have influenced the self-esteem measure. On the other hand, Koole et al. (1999) report a significant difference in implicit self-esteem between affirmation and control conditions. However, here as well the collection of the self-esteem measure did not follow immediately after the self-affirmation intervention. An intelligence test, as well as a mood test preceded its collection. The work by Koole et al. (1999) is also the only study that we have been able to identify, that formally tested self-esteem as a mediator in the affirmation effect. Results showed that implicit self-esteem did not mediate the effect of the affirmation intervention. However, it is unclear to what extent reliable conclusions can be drawn from their implicit measure of self-esteem. The authors used a 'name letter effect' test which, as they note, does not constitute a widely accepted measure of implicit self-esteem. The test assumes that positive self-views may be reflected unconsciously in more positive evaluations of one's name letters compared to letters not in one's name. The authors themselves note that 'caution is warranted in interpreting these results' (p. 120) since the used implicit measure of self-esteem is not yet well established. Testing a more subtle expression of positive feelings about the self, Cohen et al. (2000) report marginally increased feelings of self-regard in affirmed participants compared to non-affirmed, measured via the single item 'In general, how do you feel about yourself?'. However, they do not formally test whether self-regard acts as a mediator in the affirmation effect on their dependent measures, presumably because of the lack of a statistically significant treatment effect. Sherman, Nelson, and Steele (2000) report significantly increased positive self-feelings in the affirmation group compared to the

control group using the same single item measure as Cohen et al. (2000) as a manipulation check; however, they do not investigate its mediating effect.

To close this gap in the literature, following our line of reasoning outlined above, we formally test whether engaging in a values affirmation exercise increases people's positive views of themselves (i.e., feeling connected to the self, good about the self, or at peace), and whether such positive self-regard in turn mediates observed affirmation effects. We test our hypothesis in the domain of prosocial behavior.

### **Promoting prosociality**

While the positive effects of values affirmation on behavior benefiting the individual are well established, not much work has investigated its effects on prosocial behavior. The literature is sparse and mostly limited to prosocial behavioral intentions and prosocial behaviors in narrow social settings. In the domain of pro-environmental motivation which involves prosocial considerations, such as preventing harmful consequences of environmental damage to others (Schultz & Zelezny, 1998) or preserving a healthy environment for future generations (Zaval, Markowitz, & Weber, 2015), two studies provide insights. Van Prooijen, Sparks, and Jessop (2012) and Sparks, Jessop, Chapman, and Holmes (2010) investigated the effects of values affirmation on pro-environmental attitudes and intentions. Sparks et al. (2010) showed that affirmed participants exhibited lower levels of climate change denial and increased perceptions of personal involvement, as well as increased intentions to recycle among low recyclers. Van Prooijen et al. (2012) reported more constructive pro-environmental motives among participants with positive ecological worldviews following an affirmation intervention. Outside the pro-environmental domain, Crocker et al. (2008) showed positive effects on



reported love and Thomaes, Bushman, de Castro, and Reijntjes (2012) reported increased prosocial feelings towards peers in a study with Dutch adolescents. With regards to prosocial behavioral intentions, Lindsay and Creswell (2014) reported that U.S. university students who were affirmed indicated that they would give more of their income to charities compared to control participants.

Two studies offer some preliminary insights into affirmation effects on actual prosocial behavior. In a second study by Thomaes et al. (2012), teachers rated prosocial and antisocial behavior of students. Effects showed more prosocial behavior in affirmed students, but only among students who were relatively high in antisocial behavior at the baseline period. However, it is questionable whether teacher reports offer an unbiased measure of prosocial behavior. Furthermore, it is unclear whether observed effects are limited to the investigated narrow social setting of peer-interactions in schools or whether they would extend to broader settings. In a similar vein, Lindsay and Creswell (2014) showed a greater extent of helping behavior in in-person interactions, operationalized by helping the experimenter in a set-up shelf collapsing incident in the laboratory. While these studies provide important first insights into the potential of self-affirmation interventions to increase actual prosocial behavior, the question remains whether effects would extend beyond narrow, face-to-face situations or peer-group social settings to more broad measures of prosocial behavior towards distant others, such as donating money to charity or volunteering time to help unknown others. The present research aims to close these gaps in the literature to shed light on the question of whether values affirmation interventions could be used to motivate prosocial behavior towards distant and unknown others.

## **The present study**

The overall goal for the present research is two-fold. Firstly, we test whether a values affirmation intervention can motivate prosocial behavior towards unknown and distant others. Secondly, we formally test whether positive self-regard acts as a mediator in the affirmation effect in this context. We hypothesized that engaging in the values affirmation intervention task would lead to increased prosocial behavior compared to a control group. We furthermore hypothesized that engaging in the affirmation intervention would boost feelings of positive self-regard and that this triggered positive sense of self would translate into downstream prosocial action.

To test these hypotheses, we conduct two experiments. Study 1 ('Intention Study') expands on past work by testing whether a values affirmation intervention can shift prosocial behavioral intentions. It focuses on the domain of willingness to invest time to help others, as operationalized by completing an unpaid survey. Study 2 ('Behavior Study') extends effects to two measures of actual prosocial behavior: actual completion of the unpaid study and donation of real money to charity.

## **Methods**

Across two studies we investigate the potential of a values affirmation intervention to motivate prosocial behavior towards distant and unknown others. In our first study ('Intention Study'), we measure effects on prosocial behavioral intentions. In our second study ('Behavior Study'), we extend the scope of this research to measures of actual prosocial behavior: investing time for the benefit of others and donating money to charity.

Both studies were conducted on the Amazon Mechanical Turk (MTurk) online labor market platform to sample from a wide range of members of the American adult public. Sample size was 482 participants for the Intention Study ( $n_{\text{treatment}} = 241$ ,  $n_{\text{control}} = 241$ ; 51.87% females,  $M_{\text{age}} = 36.51$ ,  $SD_{\text{age}} = 11.93$ ) and 1,045 for the Behavior Study ( $n_{\text{treatment}} = 517$ ,  $n_{\text{control}} = 528$ ; 45.6% females,  $M_{\text{age}} = 35.12$ ,  $SD_{\text{age}} = 10.84$ ; a table of the detailed demographic composition of both studies is provided in the supplementary materials). Participants were randomly assigned to either the treatment (values affirmation) or a control condition. Both conditions were identical apart from the content of the intervention component, i.e., a thinking and writing task. Participants who did not engage with the task were excluded from the sample. The only participants removed for not engaging did not complete the writing task but merely typed a string of random letters to fulfill the minimum character requirement to move on with the study. No other data exclusion criteria were used. Based on the described exclusion criterion, one respondent was omitted from the Intention Study and four respondents from the Behavior Study.

Participants in the treatment group engaged in a values affirmation thinking and writing exercise (modeled after Cohen et al., 2006; Harris & Napper, 2005; Sparks et al., 2010; van Prooijen et al., 2012). Following the standard design of values affirmation interventions, participants were presented with a list of values (forgiveness, fairness, goodness, honesty, kindness, loyalty, sincerity, altruism, tolerance; adapted from van Prooijen et al., 2012 and Sparks et al., 2010) out of which they were instructed to pick the one that was most important to them and then answer several questions related to the chosen value (e.g., ‘Why is this value important to you?’, ‘How does this value guide your life?’, ‘Describe an occasion when you had the opportunity to really express this

value’). For a complete description of the intervention prompts used for the Intention Study and the Behavior Study, please refer to the supplementary materials.

Participants in the control conditions wrote about what they had eaten or drunk in the past 48 hours for the Intention Study (Cohen et al., 2000; van Prooijen et al., 2012) and described the layout and product placement of their most frequented grocery store for the Behavior Study (see Schnall & Roper, 2012 for a similar control task). We decided to change the control group writing task from the Intention Study to the Behavior Study, because a) we felt that describing a grocery store layout would be an even more emotionally neutral and hence more conservative control task and b) because we wanted to ensure that our effects would not depend on one particular control task, but be robust across different tasks. For the initial Intention Study participants engaged in about 3 minutes of thinking and writing. For the Behavior Study participants did so for about 10 minutes. Both time frames lie within the range commonly used in the literature (e.g., 3 minutes in Lindsay & Creswell, 2014; 5-6 minutes in Schnall & Roper, 2012 and Schmeichel & Vohs, 2009; 10 minutes in Crocker et al., 2008; 15 minutes in Thomaes et al., 2012).

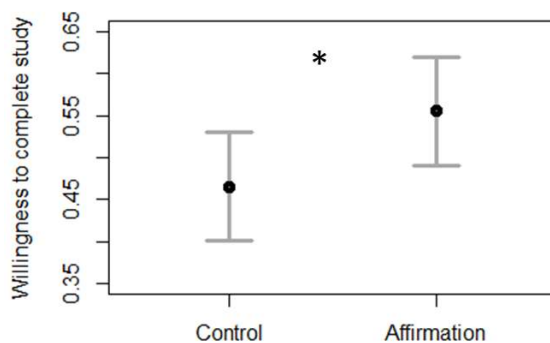
Immediately following the writing task, the mediator measure was administered. Participants were asked to indicate how they felt when they were thinking about the questions and when crafting their answers. Participants rated their feelings on a 7-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. Our measure of positive self-regard consisted of an average of three items, which included ‘I felt connected to myself’, ‘I felt good about myself’, and ‘I felt at peace’ (Cronbach’s  $\alpha$ : Intention Study = 0.84; Behavior Study = 0.88).

Following this mediator assessment, participants were presented with the dependent measures. In the Intention Study, participants were asked whether they would be willing to complete a study for free helping us ‘pretest measures for a large scale field intervention in Ecuador to reduce rainforest and wilderness habitat destruction’. In the Behavior Study, participants were provided with a link to complete the additional, unpaid survey allowing us to examine actual prosocial behavior. We measured survey completion as our dependent variable. Additionally, participants also received a donation measure in which they had the opportunity to donate any amount of their choosing of a potential \$10 bonus, which one of the participants who was randomly selected received, or to keep the money for themselves (adapted from Schneider, Zaval, Weber, & Markowitz, 2017). Participants were given the option to choose between three charities: the American Cancer Society, Amnesty International, and the World Wildlife Fund. Participants could also spread the bonus across two or three of these charities. The three possible charities offered participants a range of donation options with varying beneficiaries and missions. Giving participants only one donation outlet could bias observed results, as not donating could either be an indicator of low prosocial motivation or could alternatively merely reflect a dislike of the chosen donation outlet. For analysis, donations across all three charities per participant were summed and treated as an overall donation measure. For a breakdown of donations by charity, please refer to the supplementary materials.

## Results

### Prosocial behavioral intentions

In the Intention Study, 46.47% of control group participants indicated to be willing to complete the unpaid survey, versus 55.6% in the affirmation group. Thus, more people in the affirmation group displayed willingness to invest time to complete the additional study for free. We use a logistic regression to model our binary choice outcomes and find a statistically significant difference between prosocial behavioral intention proportions in the affirmation versus control group ( $b = .37$ ,  $SE = .18$ ,  $p = .045$ ), supporting the descriptive findings (Figure 1). These results provide initial evidence that a values affirmation intervention can increase prosocial motivation.

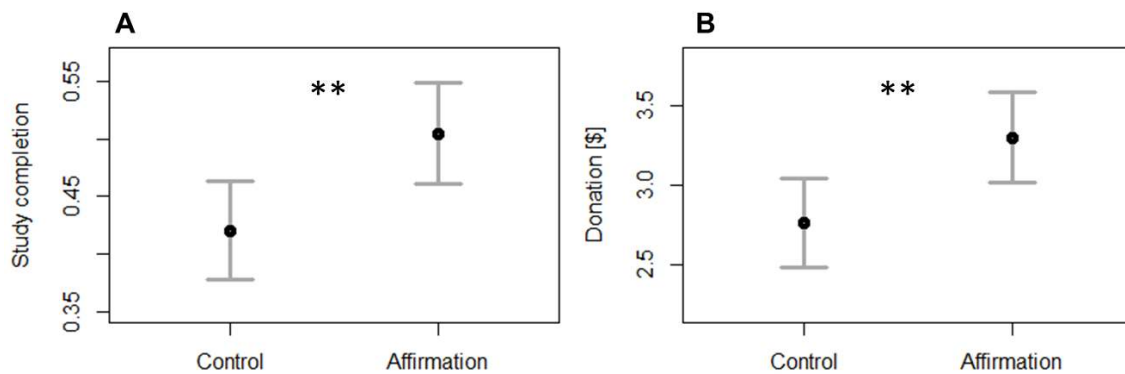


**Figure 1: Proportion of respondents indicating willingness to complete the unpaid study in the control and affirmation groups (Intention Study).** Error bars represent 95% confidence intervals. The difference in study completion intention proportions between control and affirmation groups is significant at the .05 level as indicated by \*.

### Prosocial behavior

In Study 2 (the Behavior Study), 42.05% of control group participants completed the unpaid survey versus 50.48% in the affirmation group. This 8.43 percentage points difference in actual study completion between control and affirmation groups was

statistically significant (logistic regression:  $b = .34$ ,  $SE = .12$ ,  $p = .006$ ) (Figure 2, panel A). With regards to donation to charity we find that out of the \$10 bonus, affirmed participants donated significantly more ( $M = 3.3$ ,  $SE = .14$ ) than control participants ( $M = 2.76$ ,  $SE = .14$ ;  $b = .54$ ,  $SE = .2$ ,  $p = .008$ ). Affirmed participants on average donated 54 cents more than control participants which translates into a 19.57% increase in donations due to the affirmation intervention (Figure 2, panel B).



**Figure 2: Proportion of respondents who completed the unpaid study (A) and amount donated to charity (B) in the control and affirmation groups (Behavior Study).** Error bars represent 95% confidence intervals. The difference in study completion proportions and amount donated between control and affirmation groups is significant at the .01 level as indicated by \*\*.

### Mediation analysis

To test our hypothesis that engaging in the values affirmation exercise would increase feelings of positive self-regard and that positive self-regard would mediate the effect of the affirmation intervention on our prosocial outcome measures, we conducted formal mediation analyses for each of our dependent measures using the *mediation* package in R (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014). Parameter estimates are based on the bootstrapping method, which does not assume a particular sampling distribution for the indirect effect but generates a data driven sampling distribution,

allowing for an accurate and statistically powerful test of the significance of the indirect effect (Bolger & Amarel, 2007). All reported results are based on 5,000 bootstrapped samples. Results support our hypothesis: For all outcome measures we observe a significant mediation effect of positive self-regard. In the Intention Study, positive self-regard mediated the effect of the affirmation intervention on prosocial behavioral intent to complete the unpaid survey (indirect effect = .043,  $p < .001$ , 95% CI = [.012, .081], proportion mediated = .47). In the Behavior Study, positive self-regard mediated the effect of the affirmation intervention on both study completion behavior (indirect effect = .046,  $p < .001$ , 95% CI = [.018, .073], proportion mediated = .54) as well as donation behavior (indirect effect = .472,  $p < .001$ , 95% CI = [.288, .661], proportion mediated = .88). In line with our hypothesis, our collective results suggest that increased feelings of positive self-regard, stemming from the affirmation intervention, mediate the observed effects on prosocial behavioral intentions and behavior.

## **Discussion**

The present research investigated the potential of a values affirmation intervention to promote prosocial behavior toward distant and unknown others and tested whether positive self-regard acts as a mediator in the affirmation effect. Across two experiments, we find evidence for the viability of a values affirmation intervention to motivate prosocial behavioral intentions as well as actual prosocial behavior. Results of the Intention Study show that participants who engage in a values affirmation task report increased prosocial behavioral intentions, as measured through indicated willingness to complete an unpaid survey. The Behavior Study takes these findings one step further by measuring actual completion of the unpaid study. We find that a significantly higher



percentage of participants completed the unpaid study in the affirmation condition compared to the control condition. Additionally, in the Behavior Study we show that effects also extend to the monetary domain, as measured via donation of real money to charity. We find that participants in the affirmation group donate significantly more to charity compared to control group participants. The affirmation intervention increased donations by 19.57%; an intervention effect that is substantial and meaningful in real-world terms. These findings point to a promising potential application of values affirmation interventions. They suggest that affirming people's selves via values affirmation can translate into monetary contributions as well as contributions of personal time to assist others.

Our work extends the applicability of values affirmation interventions from the personal domain to prosocial behavior. We extend research on the positive effects of values affirmation on behavior benefiting the individual, such as in the well-studied domains of academic performance (Cohen et al., 2006; Cohen et al., 2009), health behavior (Cooke et al., 2014; Epton & Harris, 2008; Logel & Cohen, 2012; Sherman & Cohen, 2006), self-control (Schmeichel & Vohs, 2009), or openness to opposing views (Cohen et al., 2000), to show that a values affirmation intervention can be effective in the prosocial domain benefiting unknown and distant others. While prior research in this domain has largely focused on pro-environmental motivation and attitudes (Sparks et al., 2010; van Prooijen et al., 2012), as well as prosocial behavioral intentions (Lindsay & Creswell, 2014) and prosocial feelings (Thomaes et al., 2012), we show that a values affirmation intervention has the potential to shift real prosocial behavior. We thereby validate and extend Lindsay and Creswell's (2014) behavioral intention results, which

found that affirmed university students intended to give more of their income to charities compared to control participants. We show that compared to control participants, affirmed participants indeed donate significantly more to charity using a real behavioral measure. With regards to actual prosocial behavior, we extend prior work that investigated effects in peer group settings (Thomaes et al., 2012) or face-to-face interactions (Lindsay & Creswell, 2014) to show that a values affirmation intervention can successfully motivate prosocial action in situations in which the beneficiaries are distant and unknown. We thus extend the existing literature and our knowledge of affirmation effects on prosocial motivation substantially.

Our studies furthermore provide a formal test of positive self-regard's role as a mediator in the affirmation effect. As hypothesized, positive self-regard emerged as a significant mediator in the relationship between the affirmation intervention and observed prosocial behavioral intent and behavior. Our studies thus advance psychological theory by helping to shed light on the mechanism that underlies values affirmation intervention effects. Our results suggest that engaging in the values affirmation intervention task increases positive self-directed feelings, such as feeling at peace with oneself, and that these feelings can translate into downstream positive intent and action towards others. We offer a line of theorizing to explain how such enhanced positive feelings about the self may translate into downstream prosocial action. As outlined in the introduction we propose that increased positive self-directed emotions may help to satisfy the need for a positive self-image and thus reduce worry about the self. This may free up cognitive and emotional resources which can be put to other uses, such as to attend to other goals and actions at hand, for instance engaging in prosocial behavior. Our suggested line of

reasoning regarding resource availability offers a way to explain the observed mediating effect of positive self-regard on prosocial behavior.

Our way of conceptualizing the affirmation mechanism not only allows us to explain effects on prosociality, but is applicable also to previously documented affirmation findings benefiting the individual. If worrying about one's positive self-image is an important chronic goal that needs to be maintained, it will take resources away from other processes the individual needs to engage in or should engage in, such as coping with stereotype threat and performing well on exams in light of it (Cohen et al., 2006; Cohen et al., 2009), or from processing threatening health information constructively and exerting effort and resources to engage in more physical activity (Cooke et al., 2014; Epton & Harris, 2008; Logel & Cohen, 2012; Sherman & Cohen, 2006). Furthermore, when one's positive self-image needs are not fully met, listening to opposing views (Cohen et al., 2000) with the threat of finding out that one was potentially wrong, may increase worry about the self-image even further; thus reducing the ability to deal with these opposing views constructively. Likewise, acknowledging that one was wrong by virtue of apologizing (Schumann, 2014) may increase worry about the self-image even further. Once the goal of maintaining a positive self-image can be satisfied through values affirmation, more attentional resources and more emotional and cognitive processing capacity are available to process threatening information and exercise more, perform well in exams in light of stereotype threat, acknowledge opposing views, or apologize in a more comprehensive and sincere fashion.

A logical next step would be to empirically test our explanation of the affirmation effect regarding resource availability. Future cross-disciplinary studies, involving

cognitive psychology and methods from neuroscience such as imaging, could provide deeper insights into the availability and allocation of resources during values affirmation and shed light on how exactly the involved processes give rise to observed behavioral outcomes.

Apart from the outlined theoretical contribution, our work also offers important applied contributions. Our findings provide evidence that values affirmation interventions could be used to motivate positive behavior change in the domain of prosocial motivation and behavior. The real-world application potential is extensive, ranging from motivating volunteer work for charitable causes to providing monetary donations to support those in need, either directly or through supporting advocacy efforts. Such prosocial actions have the potential to help address issues such as poverty and inequality, or intergroup conflict. Our studies constitute a first step toward investigating this important applied potential of values affirmation interventions. Future work should assess the impact of large-scale values affirmation interventions in the field.

Using values affirmation to promote prosocial behavior differs from other approaches that have been tested in the literature, such as the priming of legacy concerns in the context of promoting pro-environmental action (Zaval et al., 2015), the use of positive anticipated emotions about a prosocial action (Schneider et al., 2017), and the application of insights from Query Theory (Johnson, Häubl, & Keinan, 2007) that query order can influence decision making to, for instance, boost organ donations through the use of defaults (Johnson & Goldstein, 2004). Other approaches have investigated the motivating power of social norms (Sparkman & Walton, 2017), or exposure to media with prosocial content, such as music with prosocial lyrics or video games with prosocial

content to foster prosociality (see Greitemeyer, 2011 for a review). These approaches tap into a variety of different mechanisms, such as exploiting memory processes or taking advantage of the fact that humans are motivated by legacy concerns. The approach investigated in this paper of using values affirmation to foster prosociality stands out as an additional, qualitatively different and novel tool. It elicits prosocial behavior through boosting positive self-regard thereby, as we theorize, increasing the emotional and cognitive capacity of humans to act prosocially.

### **Conclusion**

Our results point towards a potential avenue for encouraging prosocial behavior. Our findings suggest that a values affirmation intervention has the potential to foster prosocial motivation towards unknown others outside of one's close social network or in-person interactions. We show that engaging in values affirmation can positively affect the time spent helping others and financial contributions to the well-being of others. Both observed effects are of high relevance and potential in the real world. Additionally, we show that positive self-regard mediates the effect of the affirmation intervention on prosocial outcomes. We offer a line of theorizing regarding resource availability to explain the observed mediation effect. Our studies both advance psychological theory by shedding light on the mechanism of values affirmation intervention effects as well as provide evidence for a potential avenue for encouraging prosocial behavior in the real world.

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Values affirmation can motivate prosocial action by leveraging positive self-regard

## Supplementary Information

### Intention Study

**Table S1. Demographic characteristics of the study sample (Intention Study).**

Variable	Intention Study ( <i>N</i> = 482)
Gender, %	
Females	51.87
Males	47.72
Age, <i>M</i> ( <i>SD</i> )	36.51 (11.93)
Education, %	46.47
Income, %	43.57
Polit. Affiliation, %	
Democrat	42.74
Republican	23.03
Independent/Other	30.91

Note: Due to some participants choosing not to indicate political affiliation or gender, percentages do not total to 100.

\*Educational Attainment = *at least Bachelor's Degree*.

\*Household income before taxes during past 12 months = *\$50,000 or over*

All participants had a 95% or higher approval rating according to the screening procedures of Amazon's Mechanical Turk.

## Supplementary Measures

### Intervention prompts

#### Affirmation group thinking and writing prompt

In this study we are interested in investigating people's values. By values we mean the principles and standards by which people try to live their lives. For example, honesty might be a core value for some people. That is, they may try to be honest in all they do – whether in dealing with other people or working. Following are some personal values that people have described as important to them.

Altruism	Fairness	Forgiveness	Goodness	Honesty	Kindness
Loyalty	Sincerity	Tolerance			

Please select the value from the list above that is most important to you, and write it in the space provided. If more than one value is equally important to you then please select just one to write about.

The most important value to me is: \_\_\_\_\_

In the space below please write a short statement (around 2-3 sentences) about why this value is important to you. Take a moment to think about this value and how this value has influenced things that you have done. Please write about how you use this value in your everyday life.

*[space provided for answer]*

#### Control group thinking and writing prompt

In this study we are interested in investigating people's general eating and drinking habits. Please write a short statement (around 2-3 sentences) listing everything that you have eaten or drunk in the past 48 hours. There is no need to worry about those things you find yourself unable to remember!

Please write your response in the space provided below:

*[space provided for answer]*

## **Mediator measure**

### **Positive self-regard measure sub-items**

When thinking about and writing my short statement on the previous page...

... I felt connected to myself.

... I felt good about myself.

... I felt at peace.

*[7-point Likert response scales; range 'strongly disagree' to 'strongly agree']*

## **Outcome measure**

Would you be willing to complete another short survey helping us pretest measures for a large-scale field intervention in Ecuador to reduce rainforest and wilderness habitat destruction? Unfortunately, we won't be able to compensate you for completing the study, however, your help would be highly appreciated and would directly benefit Ecuador's rainforests. Please indicate whether we may contact you to complete the survey. Thank you.

- ☐ Yes, you may contact me to complete the survey.
- ☐ No, please do not contact me.

## Behavior Study

**Table S2. Demographic characteristics of the study sample (Behavior Study).**

Variable	Behavior Study ( <i>N</i> = 1,045)
Gender, %	
Females	45.60
Males	53.88
Age, <i>M</i> ( <i>SD</i> )	35.12 (10.84)
Education, %	48.04
Income, %	42.01
Polit. Affiliation, %	
Democrat	45.17
Republican	20.19
Independent/Other	32.25

Note: Due to some participants choosing not to indicate political affiliation or gender, percentages do not total to 100.

\*Educational Attainment = *at least Bachelor's Degree*.

\*Household income before taxes during past 12 months = *\$50,000 or over*

All participants had a 95% or higher approval rating according to the screening procedures of Amazon's Mechanical Turk.

**Table S3. Average donations by charity.**

	Average donations by charity in USD					
	<i>M</i> <sub>affirmation</sub>	<i>SE</i> <sub>affirmation</sub>	<i>M</i> <sub>control</sub>	<i>SE</i> <sub>control</sub>	<i>M</i> <sub>total</sub>	<i>SE</i> <sub>total</sub>
American Cancer Society	1.07	0.08	1.01	0.08	1.04	0.06
World Wildlife Fund	1.37	0.09	1.04	0.08	1.21	0.06
Amnesty International	0.85	0.06	0.69	0.06	0.77	0.04

## Supplementary Measures

### Intervention prompts

#### Affirmation group thinking and writing prompt

There are many things that make life precious and worthwhile. In this study we are interested in investigating people's values. By values we mean the principles and standards by which people try to live their lives. For example, honesty might be a core value for some people. That is, they may try to be honest in all they do – whether in dealing with other people or working. Following are some personal values that people have described as important to them.

Altruism	Fairness	Forgiveness	Goodness	Honesty	Kindness
Loyalty	Sincerity	Tolerance			

Please select the value from the list above that is most important to you, and write it in the space provided. If more than one value is equally important to you then please select just one to write about.

The most important value to me is:

---

Please take your time to think about the following questions. Then write your answers in the spaces provided below each question.

Thinking about the questions and answering them should take you approximately 12 minutes.

Why is this value important to you? Please describe what it means to you.

*[space provided for answer]*

How does this value guide your life? How has it influenced things you have done and how do you practice it in your everyday life?

Please be as specific as possible, describing occasions on which this value influenced what you did and times when you had the opportunity to really express this value.

*[space provided for answer]*

Why do you appreciate this value in yourself?

*[space provided for answer]*



### Control group thinking and writing prompt

In this study we are interested in assessing and comparing different grocery store layouts and product-presentation strategies. We'd like you to describe to us the layout and product display of the grocery store you most frequently go to.

Please write down the name of the grocery store you most frequently go to:

---

Please take your time to think about the following questions. Then write your answers in the spaces provided below each question.

Thinking about the questions and answering them should take you approximately 12 minutes.

What is the general layout of the grocery store?

Please take us on a virtual journey through the grocery store, describing the general layout, including which items can be found where.

*[space provided for answer]*

How are the different items displayed? Do any products stand out in particular? Which ones and why?

*[space provided for answer]*

Please describe lighting, temperature, smell, and music (if applicable).

*[space provided for answer]*

## **Mediator measure**

### **Positive self-regard measure sub-items**

When thinking about the questions on the previous page and writing my answers...

... I felt connected to myself.

... I felt good about myself.

... I felt at peace.

*[7-point Likert response scales; range 'strongly disagree' to 'strongly agree']*

## **Outcome measures**

### **Study completion measure**

Would you be willing to complete another short survey helping us pretest measures for a large-scale field intervention in Ecuador to reduce rainforest and wilderness habitat destruction?

Unfortunately, we won't be able to compensate you for completing the study, however, your help would be highly appreciated and would directly benefit Ecuador's rainforests.

We would like to take this opportunity to kindly invite you to complete the survey which is available now.

This short survey will take less than one minute to complete.

Please follow the link below if you wish to complete the survey. It will open a new window to complete the survey. In order to finish this study, please click the 'Next' button below.

*[survey link:]* click here to complete optional 1 minute survey

If you do not wish to complete the additional survey, please just click the 'Next' button to finish this study.

Thank you for your support.

## Donation measure

As an extra "thank you" for participating in our research today, we will enter you into a lottery to win a \$10 bonus. One study participant will be chosen at random to receive this bonus (which will be given to you via MTurk).

We also would like to give you an opportunity to donate some or all of the bonus to a charitable organization, if you are the lottery winner. You may split the \$10 between yourself and a selection of charities however you want to, using the form on the next page. Any money you allocate to any of the charities will be directly donated on your behalf by the research team.

The charities you may donate to today will be shown on the next page.

*[page break]*

The three organizations that you have an opportunity to donate to today are the American Cancer Society, the World Wildlife Fund, and Amnesty International. Below are short descriptions of each of the organizations.

The **American Cancer Society**'s mission is to free the world from cancer and to save lives. Founded in 1913 the American Cancer Society is funding and conducting research, sharing expert information, supporting patients, and spreading the word about prevention, to allow people to live longer – and better. If you'd like to learn more about the organization, their website is: <https://www.cancer.org/>



The **World Wildlife Fund**'s mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth. For 50 years, WWF has been protecting the future of nature. As the world's leading conservation organization, WWF works in 100 countries challenging the threats to nature, and helping to ensure its ability to provide – for the sake of every living thing, including ourselves. If you'd like to learn more about the organization, their website is: <https://www.worldwildlife.org/>



**Amnesty International** is a human rights organization and global movement of more than 7 million people campaigning for a world where human rights are enjoyed by all. Through detailed research and determined campaigning Amnesty International helps to fight abuses of human rights worldwide, bringing torturers to justice, changing oppressive laws, and freeing people jailed just for voicing their opinion. If you'd like to learn more about the organization, their website is: <https://www.amnesty.org/en/>



You may split the \$10 between the organizations and yourself in whatever proportion you wish to. Please note that the total amount must add up to exactly \$10. Remember that you will be paid your MTurk compensation regardless of whether you win the lottery or not.

Donate to American Cancer Society : \_\_\_\_\_

Donate to World Wildlife Fund : \_\_\_\_\_

Donate to Amnesty International : \_\_\_\_\_

Keep for myself : \_\_\_\_\_

Total : \_\_\_\_\_ [*automatically calculated to ensure total amount is \$10*]

PAPER III: Reducing discrimination and fostering prosociality towards ex-prisoners in  
Nigeria and the U.S. through values affirmation

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## **Abstract**

Being socially accepted and treated fairly matters to human well-being. Yet, society often withholds these crucial needs and discriminates against certain societal groups, including ex-prisoners. Discrimination and lack of social support by the public reduces ex-prisoners' well-being and their successful reintegration into society after release from prison, perpetuating conflict and impeding social justice. Thus, identifying strategies to reduce discrimination against ex-prisoners and to foster prosocial behaviors towards them is of high relevance. Prior approaches to reducing discrimination have focused on interventions that change the perception of the targets of discrimination. Here we target the cognitive and emotional capacity of the discriminators. Building on past findings that provided evidence for the potential of a values affirmation intervention to promote prosociality towards distant and unknown others, we assess the viability of a values affirmation intervention given to members of the general public to reduce their discrimination against ex-prisoners and foster prosocial motivation towards them. To study the generality of the hypothesized processes, we do so in the cultural contexts of both Nigeria and the United States. Across two studies in these two countries, we provide evidence that engaging in values affirmation can significantly reduce discriminatory behavioral tendencies and motivate prosociality towards ex-prisoners. Our results extend past findings on the prosociality enhancing effects of a values affirmation intervention to the context of a specific, marginalized societal group as the beneficiary: ex-prisoners. We show these effects in both cultural contexts under investigation. Our results furthermore replicate previous findings that identified positive self-regard as a mediator in the positive effect of affirmation interventions on prosociality, this time in the context of responses to

ex-prisoners. The current work extends our understanding of the effects of values affirmation on behavior focused on others, namely prosociality towards marginalized groups and reduced discrimination. Apart from these theoretical contributions, our results are of high applied significance. They point towards a potential avenue for shifting the public's discriminatory views and behavioral tendencies towards ex-prisoners to support reintegration and further social justice.

# Reducing discrimination and fostering prosociality towards ex-prisoners in Nigeria and the U.S. through values affirmation

## Introduction

As humans we depend on our social environment. How we are viewed and treated by others critically shapes our well-being. Around the globe, marginalized members of society, such as ex-prisoners, often do not enjoy social justice, fair treatment, and equal opportunity. Despite having served ‘their time’ as a punishment for the crime committed, ex-prisoners are targets of stigma and discrimination upon release. Faced with discrimination, social exclusion, and lack of support, reintegration into society after release from prison and return to a successful civic life is difficult, perpetuating the spiral of recidivism, i.e., relapse into criminal behavior. In light of these challenges which societies around the world face, there is a need for strategies to reduce discrimination against ex-prisoners and engender prosociality and social support. Such efforts can contribute to the successful reintegration of ex-prisoners and promote just and peaceful societies.

In this paper, we investigate one potential avenue for lowering discrimination against ex-prisoners and fostering prosocial motivation towards them. Prior approaches to reducing discrimination have focused on interventions that change people’s perception of the targets of discrimination. Such attempts include decreasing perceived outgroup homogeneity and hence proclivity for collective blame and stereotyping. These interventions seek to encourage people to see the target as an individual instead of applying group stereotypes, for instance by highlighting the hypocrisy of collective blame for individual group members’ actions (Bruneau, Kteily, & Falk, 2018) or by



encouraging the processing of internal attributes of the target (“person level processing skills”) instead of their race (Aboud & Fenwick, 1999). Other attempts include perspective taking (Chung & Slater, 2013; Galinsky & Moskowitz, 2000; Vescio, Sechrist, & Paolucci, 2003) and elicitation of empathy towards the outgroup (Batson et al., 1997), the use of positive, counter-stereotypic exemplars (e.g., “Obama Effect” or counter-stereotypic strong woman) to change perceptions of the outgroup and reduce prejudice (Blair, Ma, & Lenton, 2001; Columb & Plant, 2011; Columb & Plant, 2016; Dasgupta & Greenwald, 2001; Plant et al., 2009), as well as training in non-stereotypic responding (Gawronski, Deutsch, Mbirkou, Seibt, & Strack, 2008; Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000; Kawakami, Dovidio, & van Kamp, 2007).

Distinctively different from these listed approaches, here we target the cognitive and emotional capacity of the discriminators and assess the viability of a values affirmation intervention given to members of the general public to reduce their discrimination against ex-prisoners and to foster prosocial motivation towards them. Affirming one’s values has been suggested to demonstrate one’s adequacy and integrity to oneself (Cohen & Sherman, 2014; Steele, 1988) and generate a sense of self-determination (Nelson, Fuller, Choi, & Lyubomirsky, 2014; Sherman & Cohen, 2006; Steele, 1988). It may thus fulfill the human need for establishing and maintaining a positive self-image (Covington, 1992; Epstein, 1973; Heine, Lehman, Markus, & Kitayama, 1999; Maslow, 1943; Steele, 1988), allowing humans to focus their resources on other goals and behaviors as suggested by Schneider and Weber (2018).

Values affirmation interventions have been documented to lead to beneficial effects directed towards others, such as increased feelings of love and connection

(Crocker, Niiya, & Mischkowski, 2008) and prosocial feelings towards peers (Thomaes, Bushman, de Castro, & Reijntjes, 2012). Most recently a study by Schneider and Weber (2018) showed positive effects on prosocial behavior towards unknown and distant others. Affirmed participants were significantly more likely to give money and to spend time to assist others compared to control participants. Building on these promising findings, here we test whether prosociality enhancing effects extend to situations in which those distant and unknown others are specified to be members of certain marginalized or discriminated against societal groups, such as ex-prisoners.

We focus our investigation on Nigeria and the United States, two countries on different continents with different histories and cultures that both struggle with the reintegration of ex-prisoners into society upon release from prison. The United States has one of the highest rates of imprisonment in the world (Celinska, 2000). Consequently, the sheer number of ex-prisoners returning to society every year poses a challenge and constitutes a problem not to be neglected (Snider & Reysen, 2014; Stafford, 2006). In fact, it has created a national debate on how to tackle the ‘reentry crisis’ (Johnson, 2008; Travis, 2005). In Nigeria, severely inadequate government rehabilitation programs routinely fail to successfully reintegrate ex-prisoners into society (Ogbozor, Odoemena, & Obi, 2006; Otu & Nnam, 2014; Otu, Otu, & Eteng, 2013; Yekini & Salisu, 2013). In the U.S. as well the provision and success of prison rehabilitation programs is far from adequate (Cnaan, Draine, Frazier, & Sinha, 2008; Freeman, 2008). A failure to successfully reintegrate ex-prisoners into society is strongly correlated with recidivism, the relapse into criminal behavior after release from prison, creating a vicious cycle for many offenders (Bloom, 2006; Osayi, 2013; Otu & Nnam, 2014). Abrifor, Atere, and

Muoghalu (2012) report a rising trend in repeated incarceration of prisoners in Nigeria from 35% in 2007 to 52.4% in 2010. The Bureau of Justice Statistics within the U.S. Department of Justice tracked inmates released from state prisons in 30 states in 2005. A special report released in 2014 found that roughly two-thirds (67.8%) of released prisoners were re-arrested within three years of release. The number climbed to roughly three-quarters (76.6%) for the time frame of five years post release (Durose, Cooper, & Snyder, 2014). Hence, there is a need for effective reintegration into society to combat recidivism and lower the costs to society (Bloom, 2006).

Rehabilitation programs geared at ex-prisoners are only one avenue to address this social issue. How ex-prisoners are received and treated by society upon release critically influences reintegration success (Hirschfield & Piquero, 2010). Ex-prisoners around the world face stigma and discrimination upon release from prison in many areas of life. In both countries much research highlights the existence and issue of societal stigmatization, labeling, and discrimination against ex-prisoners (Brown, 2016; Celinska, 2000; Cnaan et al., 2008; Geiger, 2006; Hirschfield & Piquero, 2010; Kethineni & Falcone, 2007; Ogbozor et al., 2006; Osayi, 2013; Pogrebin, West-Smith, Walker, & Unnithan, 2014; Snider & Reysen, 2014; Thompson & Cummings, 2010; Ugwuoke, 2010). In the Nigerian context, Shobola and Ajeigbe (2015) point out that the general public is especially prone to social rejection of ex-prisoners by withdrawing and dissociating from them. Work in the U.S. has revealed that ex-prisoners feel discriminated against due to being a former prisoner more than any other reason for discrimination, such as race/ethnicity, past drug/alcohol use, gender, sexual orientation, or mental and physical disabilities (LeBel, 2012). Discrimination against ex-prisoners

exacerbates the reentry challenge. It elevates psychological stress, deteriorates well-being and self-esteem (Aneshensel, 1992; LeBel, 2012; Thoits, 2010), and can severely impede the motivation and ability to return to a law-abiding life after release from prison (Aresti, Eatough, & Brooks-Gordon, 2010; Ugwuoke, 2010). In Nigeria, dire prison conditions contribute to the challenges prisoners face upon release (Amnesty International, 2008; Obioha, 2011; Otu & Nnam, 2014; Ugwuoke, 2010). Prisoners are physically and mentally deprived at the time of release (Otu et al., 2013) which feeds into a reduced ability to withstand discrimination. The dehumanizing tendencies of Nigerian prisons make it almost impossible for most ex-prisoners to successfully reintegrate into society, especially when faced with discrimination upon release (Obioha, 2011). But even in arguably better prison conditions in developed countries such as the United States, being incarcerated puts significant stress on prisoners which decreases the ability to withstand discrimination post release (Haney, 2001).

One domain in which discrimination against ex-prisoners is especially prevalent and much documented is employment (e.g., Flake, 2015; Freeman, 2008; Ogbozor et al., 2006; Salaam, 2013; Snider & Reysen, 2014). Employers are often reluctant to hire ex-prisoners (Jonson & Cullen, 2015; Stafford, 2006). A study which interviewed ex-prisoners in Nigeria found that all respondents expressed difficulties finding employment after release from prison (Brown, 2016). In an influential field experiment in the U.S. by Pager (2003), job applications were sent to employers matched on all attributes except criminal history. Results showed that applicants with a criminal record were significantly less likely to receive a positive employer response compared to their matched non-criminal counterparts. These findings highlight the negative effect criminal record can

have on employability. A study that interviewed formerly incarcerated individuals revealed that many avoid disclosure of their criminal histories in the job application process in order to not be rejected based on their prior incarceration (Harding, 2003). As in the U.S., being labeled also impedes job prospects for ex-prisoners in Nigeria (Ogbozor et al., 2006; Salaam, 2013). This situation is especially concerning since having a job constitutes economic security and stability and provides the motivation to create a better life, which is much needed in order to abstain from crime (Salaam, 2013; Shivy et al., 2007; Snider & Reysen, 2014). Attempts from a regulatory side include campaigns like ‘Ban the Box’ in some U.S. states, which removed the question about past criminal record from initial job applications (Henry & Jacobs, 2007).

Such regulatory attempts, however, do not address the problem of discrimination against ex-prisoners in the minds of the public and in their behavioral tendencies towards ex-prisoners. However, without an overall change towards less discriminatory tendencies and more prosocial motivation to provide support, it is unlikely that the described problems can be solved. Thus, there is a need to involve society and the social environment in successful rehabilitation and reintegration of ex-prisoners (Brown, 2016; Hirschfield & Piquero, 2010; Wright & Cesar, 2013). Being accepted and supported may promote motivation to abstain from crime and provide mental strength to do so (Aresti et al., 2010). Changing discriminatory views and behavioral tendencies of the public may also help to reduce discrimination in the employment sector as hiring committees and employers are part of larger society and may be influenced by the prevalent views and behaviors towards ex-prisoners.

Hence, an intervention that addresses the public and fosters prosocial motivation and reduces discriminatory tendencies towards ex-prisoners may support rehabilitation and reintegration of ex-prisoners into society. Thus, identifying effective strategies to achieve this goal is of high applied importance as it holds the potential of contributing to just and peaceful societies.

### **The proposed intervention**

We propose a values affirmation intervention given to members of the general public to reduce their discrimination against ex-prisoners and to foster prosocial motivation towards them. As outlined above, our intervention is distinctly different from conventional anti-discrimination research. It is novel in that it targets the cognitive and emotional capacity of the discriminators, instead of their perception of the targets of discrimination. Our approach is also novel with regards to the use of values affirmation towards this end. In their review on interventions that aim to reduce stigma across domains, Cook, Purdie-Vaughns, Meyer, and Busch (2014) identify values affirmation as a tool to support members of stigmatized groups *cope* with stigma but do not address its potential to help the public *reduce* their stigma and discriminatory tendencies towards ex-prisoners.

As described above, our hypothesis is an extension of past values affirmation work that showed positive effects on prosociality towards distant and unknown others (Schneider & Weber, 2018). We extend these findings to a new context, i.e., that of responses to ex-prisoners. Additionally, we critically add to the literature by testing the generalizability of the effects, both enhanced prosociality in general, as evidenced by

Schneider and Weber (2018), as well as prosociality specifically towards ex-prisoners, across two different cultural domains.

A large body of research on self-affirmation interventions exists for the U.S. context where the origins of self-affirmation theory lie. Examined consequences of values affirmation have spanned domains, including academic performance (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009), health behavior change (Cooke, Trebaczyk, Harris, & Wright, 2014; Epton & Harris, 2008; Logel & Cohen, 2012; Sherman & Cohen, 2006), and well-being (Nelson et al., 2014; Ryan & Deci, 2001). Outside the North American context (U.S. and Canada), some work has been conducted in Europe, such as the United Kingdom (e.g., Armitage, Harris, Hepton, & Napper, 2008; Armitage & Rowe 2017; Harris, Harris, & Miles, 2017; Sparks, Jessop, Chapman, & Holmes, 2010; van Prooijen, Sparks, & Jessop, 2012), the Netherlands (e.g., de Jong, Jellesma, Koomen, & de Jong, 2016; Thomaes et al., 2012), and France (e.g., Taillandier-Schmitt, Esnard, & Mokoukolo, 2012). However, only very sparse research exists that has investigated self-affirmation interventions in non-Western cultures, such as China (e.g., Cai, Sedikides, & Jiang, 2013; Gu et al., 2016) or countries in Africa.

The African context, in particular, has been vastly ignored so far. The only self-affirmation type study there that we have been able to identify has been conducted in Kenya (McClendon & Riedl, 2015). The study tested the potential of self-affirmation type messages in a religious context to motivate political activism through participation in a political text messaging campaign to share views on government performance and policy priorities. It is important to note that the study did not use the typical values

affirmation intervention design that has people reflect on a personal value that is important to them, but rather had participants listen to different religious sermons that were designed to deliver either self-affirming or non-self-affirming messages. Results show a statistical trend such that participants who were exposed to the self-affirming message showed marginally higher rates of participation in the text messaging campaign. The authors posit that self-affirmative religious messages can enhance people's feelings of capability and self-worth which may have positive effects on political activism to benefit the collective. However, the study only provides weak statistical evidence and furthermore deviates in significant ways from the essence of a values affirmation intervention by deciding for the participants what message should be self-affirming to them rather than engaging them in an internal, self-driven, self-affirmation process. In light of these limitations and the fact that the study was conducted in Kenya, a different African country than the one under investigation in this research, it remains an open question whether a values affirmation intervention could be effective in the cultural context of Nigeria. Furthermore, the exact nature of the affirmation interventions in the presented studies from various countries, as well as experimental designs and overall research questions vary substantially, thus making it difficult to compare effects to U.S. findings and hence to speak to the generalizability of the affirmation effects across countries.

Our study thus adds to the literature in several important ways. We test the generalizability of affirmation effects in the domain of prosocial behavior and its mechanism by conducting two studies with identical research questions and experimental design in Nigeria and the United States. We furthermore extend knowledge on the



applicability of values affirmation interventions to promote prosociality to the specific domain of ex-prisoners. Lastly, we extend the literature on anti-discrimination research in crucial ways by investigating a novel avenue that targets people's cognitive and emotional capacity, instead of their perception of the targets of discrimination. We thereby tap into a previously unidentified and unexplored avenue of reducing discrimination and supporting ex-prisoners.

The goal of the present set of studies is three-fold: We first seek to test a potential intervention that could be applied to change the public's discriminatory behavioral tendencies towards ex-prisoners and promote prosociality towards them. Second, we seek to extend the reach of values affirmation interventions and evaluate their applicability to enhance prosociality in contexts in which members of marginalized societal groups, such as ex-prisoners, are the beneficiaries. Third, we seek to test the generalizability of values affirmation effects across cultures.

Towards this end, we run two studies in two cultural contexts. The first study explores our research questions in Nigeria. A second study tests whether observed effects extend and generalize to the United States. Both are countries that would benefit significantly from strategies to lower discrimination against ex-prisoners and stimulate prosocial motivation by the public towards them. We start by replicating findings by Schneider and Weber (2018) that showed that values affirmation interventions can foster prosocial motivation towards unknown, distant others. We then test whether observed effects extend to situations in which the beneficiary of the prosocial action is an ex-prisoner. Apart from prosocial motivation we test whether a values affirmation intervention can reduce discriminatory tendencies. We hypothesize to find higher

prosocial motivation and lower discrimination towards ex-prisoners in the affirmation groups compared to the control groups. Furthermore, our studies seek to replicate findings that have identified positive self-regard as a mediator in the affirmation effect on prosociality (Schneider & Weber, 2018). Additionally, we test whether positive self-regard also mediates the effect of the values affirmation intervention in the context of ex-prisoners. Towards this end, we first replicate mediation findings for general prosocial motivation and then investigate whether positive self-regard also mediates the effect of the affirmation intervention on prosocial motivation towards ex-prisoners and reduced discrimination.

## **Methods**

Across two studies in two different countries we investigate the potential of a values affirmation intervention to reduce discrimination and foster prosocial motivation towards ex-prisoners. The first study, conducted in Abuja, the Federal Capital Territory of Nigeria, surveyed the general Nigerian public. The second study, run on the Amazon Mechanical Turk (MTurk) online labor market platform, sampled from the general U.S. population. To be able to assess the generalizability of our intervention we use the same study design and measures for both samples. Details on the methodology for each study are provided below.

### **Nigeria Study**

Participants for the Nigeria Study were recruited in person in several locations in Abuja, Nigeria, such as in shopping malls, markets, parks, residential and business complexes, ministries, NGOs, churches, on a university campus, or on the streets. Sample size of the Nigeria Study was 414 participants ( $n_{\text{affirmation}} = 201$ ,  $n_{\text{control}} = 213$ ; 44.44%

females,  $M_{\text{age}} = 27.46$ ,  $SD_{\text{age}} = 8.33$ ; a table of the detailed demographic composition is provided in the supplementary materials). After giving informed consent to partake in the study, participants completed the survey in private. The survey was conducted in English, the official language in Nigeria. Participants were randomly assigned to either the values affirmation treatment condition or a control condition. Both questionnaires were equal in length. Conditions only varied on the content of the intervention component, i.e., a thinking and writing task that either engaged participants in a values affirmation or in a control exercise. Participants who did not engage with the intervention task were excluded from the sample. Engaging was defined as answering at least one of the four questions that the affirmation and control prompts asked respectively. There was no minimum word requirement for answering a question. As long as the participant wrote any amount of characters, the question was counted as answered. We chose this very lenient exclusion criterion to get a conservative estimate of the affirmation effect. No other data exclusion criteria were used. Based on the described exclusion criterion, 16 respondents were omitted.

Since we sought to replicate and extend findings from Schneider and Weber (2018) regarding the prosociality enhancing effects of a values affirmation intervention, we used the same intervention, following a standard procedure used in many prior studies employing values affirmation (e.g., Cohen et al., 2006; Harris & Napper, 2005; Sherman, Nelson, & Steele, 2000; Sparks et al., 2010; van Prooijen et al., 2012). Participants were presented with a list of values of which they were instructed to pick the one that was most important to them. The list of values that was presented to participants was adapted from Schneider and Weber (2018) to reflect meaningful values for the Nigerian context.

Likewise, the affirmation prompt wording was adapted to be appropriate for the cultural context. This was achieved in consultation with the local support team which consisted of representatives from Citizens United for the Rehabilitation of Errants (CURE) Nigeria, a Nigerian civil society organization working on justice system reform by way of conducting surveys that shed light on prison conditions, and other advocacy work to further social justice in the country (see [curenigeria.org](http://curenigeria.org)). The appropriateness of the study design for the Nigerian context was furthermore ensured by drawing on insights gained during interview-style pre-testing of the questionnaire ( $n = 53$ ) and from an online pilot surveying Nigerian respondents ( $n = 54$ )<sup>1</sup>. For the instructions of the affirmation prompt the word ‘value’, used in the standard intervention prompt designed in and for the U.S. context, was changed to ‘behavior’. This was necessary to preserve the meaning of the word ‘value’ as it is understood in the U.S. context where values affirmation interventions originated. During interviews with participants in the pre-test stages and from conversation with the local support team we learned that for Nigerians ‘value’ was rather understood in monetary terms, while ‘behavior’ more adequately captured the meaning of value in the self-affirmation context. For the list of values that was presented to participants the qualitative part of the online pilot with Nigerian respondents ( $n = 54$ ) indicated that some of the original values used in the study by Schneider and Weber (2018) were not understood well by Nigerians, interpreted differently, or deemed less

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<sup>1</sup> The online pilot included a brief affirmation exercise designed to gauge the emotional effect the intervention would have on Nigerian participants. Since self-affirmation interventions were designed in and for the U.S. context and not much work has investigated its applicability for the African, specifically Nigerian context, this rough ‘safety check’ allowed us to ensure that the intervention would not have unexpected adverse emotional effects on Nigerian respondents. Participants indicated to what extent engaging in the affirmation exercise made them feel good about themselves and sad on a 4-point Likert scale ranging from ‘not at all (1)’ to ‘very much (4)’. Participants indicated high levels of good feelings about the self ( $M = 3.74$ ,  $SD = 0.44$ ) and low levels of feelings of sadness ( $M = 1.35$ ,  $SD = 0.72$ ), with the difference being statistically significant ( $t(59.44) = 17.42$ ,  $p < .001$ ).

important compared to other values which participants felt were missing from the list. Values that were not well understood, interpreted differently, or less important to Nigerians were omitted from the list and replaced by values which participants had suggested to be important to Nigerians, in consultation with the local team<sup>2</sup>. The final list of values included compassion, forgiveness, kindness, generosity, goodness, mercy, and love. Finally, the list of values, together with all other measures of the questionnaire, were pre-tested in three rounds of pilot interviews (n = 53) and a quantitative pilot which we used to refine the survey (n = 69). Results of the quantitative pilot are presented in the supplementary materials. They are consistent with the results presented here for the main study.

The affirmation prompt asked participants to reflect on four broad questions and to write down their answers. Questions included, ‘Please think about the behavior you chose and write what it means to you and why it is important to you’, ‘How does the behavior you chose guide your life? How has it influenced things you have done and how do you practice it in your everyday life?’, ‘Please think about a time when you had the opportunity to really show the behavior you chose towards other people and write about it’, and ‘Why do you like the behavior you chose in yourself?’. The control condition writing prompt likewise was adapted from Schneider and Weber (2018) and asked participants to describe different aspects of the markets or grocery stores they most often frequent. Questions included, ‘Please tell us the names and locations of the markets or stores you go to. Where are they located?’, ‘What things do you buy from where? Where do you buy your food stuff? Where do you buy other things, like clothes or soap?’, ‘What

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<sup>2</sup> Values omitted and replaced include altruism, fairness, honesty, loyalty, sincerity, and tolerance. Values added include compassion, generosity, mercy, and love.

is the layout of the market or the store you most often go to, meaning in what section of the market or the store can you find what type of food stuff?', and 'How big is the market or store where you buy your food stuff?'. For a complete description of both affirmation and control intervention prompts, please refer to the supplementary materials.

Completing the intervention component of the questionnaire took participants about 10-15 minutes which is in line with the common time frame of most values affirmation studies (e.g., Crocker et al., 2008; Schneider & Weber, 2018; Thomaes et al., 2012).

For the following survey items, answers were collected on 7-point Likert scales ranging from 'none' to 'all', 'never' to 'always', or 'not at all' to 'completely'. We ensured that these answer scales were appropriate for the Nigerian context and correctly understood by participants. The scales were checked against similar questionnaires administered by the local partner organization, CURE Nigeria, and informed by survey measures from Afrobarometer, a pan-African, non-partisan research network that conducts public attitude surveys in more than 35 countries in Africa ([afrobarometer.org](http://afrobarometer.org)). Opinion polls in Nigeria by Afrobarometer ranging from 2003 to 2014 were consulted regarding their design and use of various answer scales. Furthermore, appropriateness of the answer scales for the Nigerian context was also ensured by discussing the scales with the local team in Nigeria and by pre-testing them in the interview-style pilots.

Following the affirmation and control interventions respectively, the mediator measure was collected. Adapted from Schneider and Weber (2018), two sub-items probed positive self-regard (Cronbach's  $\alpha = .84$ ). Participants were asked to indicate to what extent they felt 'at peace with themselves' and 'good about themselves' while engaging in the affirmation[control] task.

The following dependent measures were then collected.

*General prosociality.* First, the study probed general prosocial behavioral intent towards non-specified others in order to replicate past findings by Schneider and Weber (2018). Their study had investigated prosocial motivation in two domains: monetary donations as well as investment of personal time to help others. In line with those measures, our dependent variable consisted of four sub-items probing intentions to invest personal free time to assist someone as well as intentions to give available money. Questions included, ‘How much of your free time over the next three months do you intend to spend helping someone in need?’ and ‘If someone in need approached you right now asking for assistance, how much of your available money would you give?’ (Cronbach’s  $\alpha = .78$ ). For a full description of all dependent measures and their sub-items used in this research, please refer to the supplementary materials.

*Prosociality towards ex-prisoners.* In order to offer a direct extension to the domain of ex-prisoners, the study next probed prosocial motivation using the same items as before, but this time specifying an ex-prisoner as the recipient of the prosocial action. Ex-prisoner was defined as ‘someone who spent time in prison’. The questions included, ‘How much of your free time over the next three months do you intend to spend helping an ex-prisoner?’ and ‘If an ex-prisoner approached you right now asking for assistance, how much of your available money would you give?’ (Cronbach’s  $\alpha = .88$ ). Apart from these general measures of prosocial motivation, the study also probed participants’ motivation to provide concrete prosocial action to assist ex-prisoners: participation in a tutoring program for ex-prisoners. Participants were told that in this tutoring program members of the general public, like themselves, would share their knowledge and skills

with ex-prisoners to help them learn and advance their skills. Participants were asked to indicate their willingness to be a tutor for an ex-prisoner and share their knowledge and skills with the ex-prisoner. Support of the program and willingness to participate was measured by two items: Amount of personal free time to spend on tutoring, if any, and amount of free time to invest on recommending the program to friends, if any (Cronbach's  $\alpha = .69$ ). Participants were told that recommending the tutoring program to friends would include explaining the program to them and trying to get them interested in participating.

*Discriminatory behavioral tendencies towards ex-prisoners.* The study also assessed discriminatory behavioral tendencies towards ex-prisoners and whether the affirmation intervention could reduce discrimination. The discrimination measure consisted of three sub-items (Cronbach's  $\alpha = .76$ ). One item probed discriminatory behavioral tendencies in the work domain ('Imagine you are the CEO of a company. Would you employ an ex-prisoner if he or she had the same qualifications as other candidates?'), another item probed discriminatory tendencies in the private life domain ('Would you feel comfortable having an ex-prisoner as your neighbor?'), and a third item assessed action intent against discriminatory behavior ('If an ex-prisoner approached you for help because he or she is discriminated against by his/her employer, would you help him or her?'). Items were reverse coded to represent a measure of discrimination.

*General attitude towards ex-prisoners.* Lastly, we assessed whether the values affirmation intervention would have a positive effect on the general attitude people hold towards ex-prisoners. We assessed this by asking participants to what extent they agreed with the statement that ex-prisoners 'are people like you and me and deserve a second



chance’ or ‘are criminals and always will be and do not deserve a second chance’.

Agreement was measured via a two-tiered process adapted from similar measures used by Afrobarometer. First participants picked one of the two statements and then indicated their level of agreement with the statement they had picked on a 3-point Likert scale, ranging from ‘not very strongly’ to ‘very strongly’. This question design allowed us to construct a fine grained 6-point answer continuum ranging from ‘strongly agree that they do not deserve a second chance’ to ‘strongly agree that they deserve a second chance’.

### **U.S. Study**

To sample from a wide range of members of the American adult public, the U.S. Study collected survey responses from an online sample using the Amazon Mechanical Turk (MTurk) online labor market platform. Sample size was 1,093, with 533 participants in the affirmation group and 560 participants in the control group (56.08% females,  $M_{\text{age}} = 35.41$ ,  $SD_{\text{age}} = 11.24$ ; please refer to the supplementary materials for the detailed demographic composition of the sample). As in the Nigeria Study, all participants were randomly assigned to either the values affirmation or the control condition. The U.S. Study used the same affirmation intervention prompt, including the same list of values, as the Nigeria Study, with one difference: For the U.S. Study the original values affirmation wording from the literature, using the word ‘value’ (instead of ‘behavior’ as in the Nigeria Study), was retained. The control condition prompt was identical to that of the Nigeria Study with some minor language changes to ensure cultural appropriateness. For instance, while the Nigeria Study had asked participants to think of ‘markets and grocery stores’ when describing their shopping experience, the U.S. Study used the wording ‘department stores and grocery stores’. For a complete

description of both, affirmation and control group writing prompts please refer to the supplementary materials.

All measures of the U.S. Study were identical to those of the Nigeria Study. We first assess the mediator, positive self-regard (Cronbach's  $\alpha = .91$ ). We then test general prosocial behavioral intentions (Cronbach's  $\alpha = .84$ ), prosocial behavioral intentions towards ex-prisoners (Cronbach's  $\alpha = .9$ ), interest and intention to engage in the tutoring program for ex-prisoners (Cronbach's  $\alpha = .86$ ), discriminatory behavioral tendencies towards ex-prisoners (Cronbach's  $\alpha = .83$ ), and overall attitude towards ex-prisoners<sup>3</sup>. For the U.S. Study, we added one measure of actual prosocial behavior at the end of the study: donation to charity. This measure was taken from Schneider and Weber (2018) and implemented in an identical fashion for replication purposes. For this measure participants were given the opportunity to donate any amount of their choosing of a potential \$10 bonus which one randomly selected participant received through the MTurk platform<sup>4</sup>. Participants were given the option to choose between three charities, the American Cancer Society, Amnesty International, and the World Wildlife Fund. Participants could also spread the bonus across several charities. As in Schneider and Weber (2018), the three possible charities were chosen to offer participants a range of donation options with varying beneficiaries and missions. Giving participants only one donation outlet could bias observed results, as not donating could either be an indicator of low prosocial motivation or could alternatively merely reflect a dislike of the chosen donation outlet. For analysis purposes donations across all three charities per participant

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<sup>3</sup> Internal consistency (Cronbach's  $\alpha$ ) of our measures was high and comparable for both cultural contexts.

<sup>4</sup> This measure could not be implemented in the Nigeria Study since, in order to ensure anonymity and confidentiality for this in-person study, no private information could be collected that would have been needed to follow up with participants after the study to allocate the bonus.

were summed and treated as an overall donation measure. For a breakdown of donations by charity, please refer to the supplementary materials. Linear regression analysis was used to model all of the effects presented below.

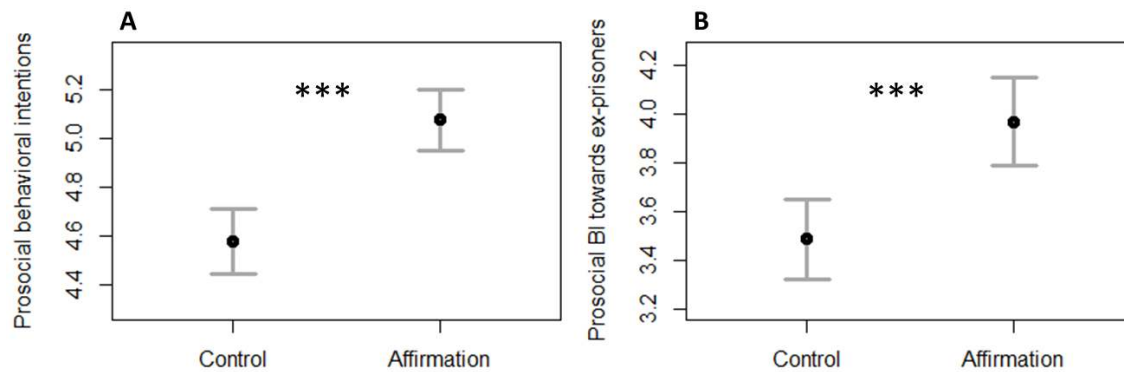
## Results

In the following, we describe the results of the values affirmation intervention versus control on general prosociality, prosociality and discriminatory behavioral tendencies towards ex-prisoners, and general attitude towards ex-prisoners in the two countries.

### Nigeria Study

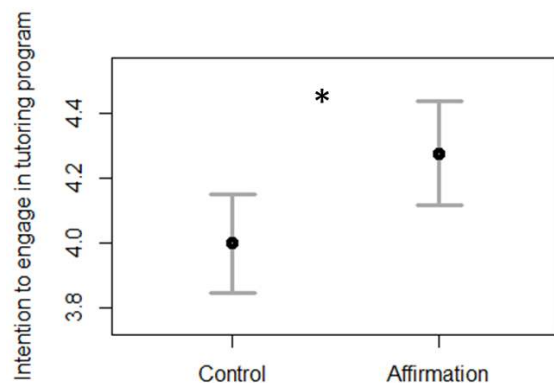
*General prosociality.* As a first step we sought to test findings from Schneider and Weber (2018) in the cultural context of Nigeria. Their work showed that a values affirmation intervention can promote prosocial motivation towards distant and unknown others. Results of our Nigeria sample indicate higher prosocial behavioral intentions in the affirmation group ( $M = 5.07$ ,  $SE = .06$ ) compared to the control group ( $M = 4.58$ ,  $SE = .07$ ). Linear regression results confirm this descriptive pattern ( $b = .5$ ,  $SE = .09$ ,  $p < .001$ ) (Figure 1, panel A), extending the findings by Schneider and Weber (2018) to a nonwestern, African cultural context.

*Prosociality towards ex-prisoners.* We next examine prosocial motivation towards ex-prisoners as the beneficiaries. Findings show that affirmed participants exhibited significantly higher prosocial behavioral intentions towards ex-prisoners, including intentions to give money and personal time to assist ex-prisoners ( $M = 3.97$ ,  $SE = .09$ ), compared to control participants ( $M = 3.49$ ,  $SE = .08$ ;  $b = .48$ ,  $SE = .12$ ,  $p < .001$ ) (Figure 1, panel B).



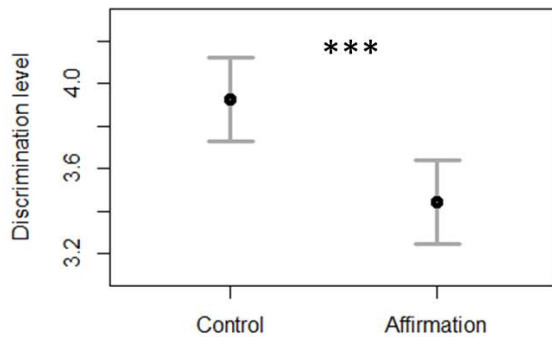
**Figure 1: Prosocial behavioral intentions in general (A) and towards ex-prisoners (B) for control and affirmation groups (Nigeria).** Error bars represent 95% confidence intervals. Treatment effects are significant at the .001 level as indicated by \*\*\*.

To assess prosociality towards ex-prisoners in more concrete terms, participants were asked to indicate their willingness to engage in a tutoring program for ex-prisoners. We find a significant positive treatment effect of the values affirmation intervention such that affirmed participants indicated significantly higher support of and intention to participate in the tutoring program ( $M = 4.28$ ,  $SE = .08$ ) compared to control participants ( $M = 4.0$ ,  $SE = .08$ ;  $b = .28$ ,  $SE = .11$ ,  $p = .015$ ) (Figure 2).



**Figure 2: Intentions to engage in tutoring program for ex-prisoners for control and affirmation groups (Nigeria).** Error bars represent 95% confidence intervals. The treatment effect is significant at the .05 level as indicated by \*.

*Discriminatory behavioral tendencies towards ex-prisoners.* With regards to discrimination against ex-prisoners our results indicate that the affirmation intervention significantly reduced our measure of discriminatory tendencies. Affirmed participants ( $M = 3.44$ ,  $SE = .1$ ) indicated significantly lower discriminatory behavioral tendencies towards ex-prisoners compared to control participants ( $M = 3.93$ ,  $SE = .1$ ;  $b = -.48$ ,  $SE = .14$ ,  $p < .001$ ), comprised for example of higher intentions to employ an ex-prisoner or feeling more comfortable having an ex-prisoner as a neighbor (Figure 3).

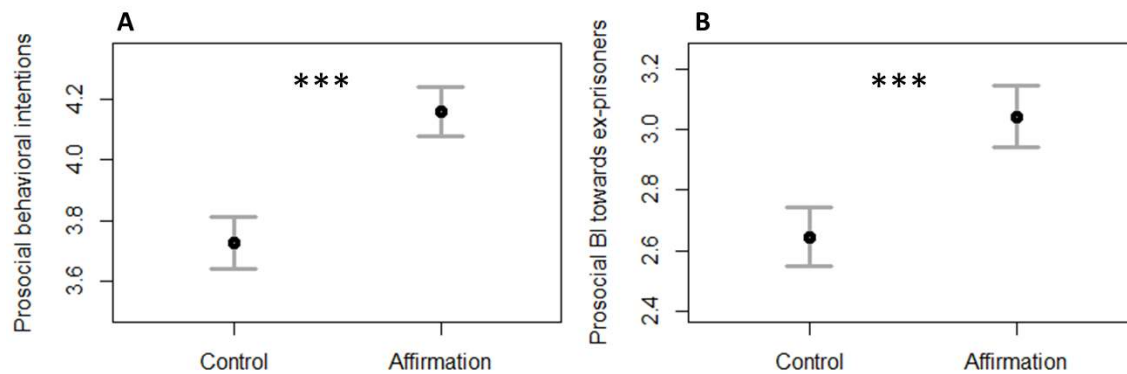


**Figure 3: Discrimination levels for control and affirmation groups (Nigeria).** Error bars represent 95% confidence intervals. The treatment effect is significant at the .001 level as indicated by \*\*\*.

*General attitude towards ex-prisoners.* Lastly, we examine whether the values affirmation intervention had an effect on general attitude towards ex-prisoners, operationalized via agreement with whether ex-prisoners deserve a second chance. Results show that independent of treatment assignment, participants gave very high ratings, indicating a strong belief that ex-prisoners deserve a second chance (affirmation group:  $M = 5.26$ ,  $SE = .06$ , control group:  $M = 5.19$ ,  $SE = .06$ ). We do not find a significant difference between treatment groups ( $b = .07$ ,  $SE = .09$ ,  $p = .426$ ).

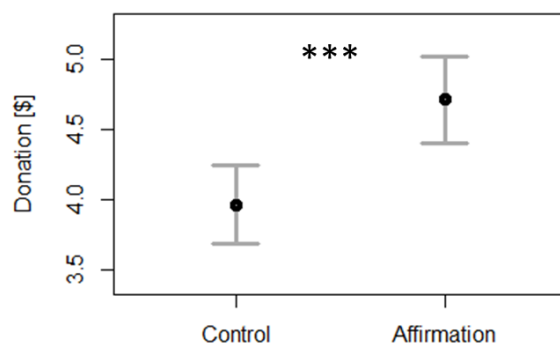
## U.S. Study

*General prosociality.* We start by examining whether we replicated findings by Schneider and Weber (2018) who showed that a values affirmation intervention can promote prosociality towards unknown and distant others. Our results show that participants in the affirmation group ( $M = 4.16$ ,  $SE = .04$ ) displayed significantly higher prosocial behavioral intentions compared to participants in the control group ( $M = 3.73$ ,  $SE = .04$ ;  $b = .43$ ,  $SE = .06$ ,  $p < .001$ ) (Figure 4, panel A). This finding not only replicates effects shown by Schneider and Weber (2018) but is also in line with findings of the Nigeria Study. Our measure of actual prosocial behavior, donation to charity, likewise shows a significant treatment effect of values affirmation, therefore constituting a direct replication of the behavioral effect reported in Schneider and Weber (2018). Out of the \$10 bonus, affirmed participants donated significantly more ( $M = 4.71$ ,  $SE = .16$ ) than control participants ( $M = 3.97$ ,  $SE = .14$ ;  $b = .75$ ,  $SE = .21$ ,  $p < .001$ ) (Figure 5). We observe that affirmed participants on average donated 74 cents more to charity than control participants, translating into an 18.64% increase in donations due to the affirmation intervention. The magnitude of the intervention effect in the current study is comparable to the Schneider and Weber (2018) study which reported a 19.57% increase.



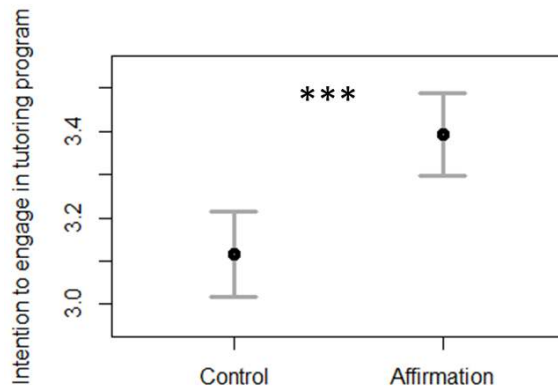
**Figure 4: Prosocial behavioral intentions in general (A) and towards ex-prisoners (B) for control and affirmation groups (U.S.).** Error bars represent 95% confidence intervals. Treatment effects are significant at the .001 level as indicated by \*\*\*.

*Prosociality towards ex-prisoners.* Driven by the findings of the Nigeria Study, we next test whether observed effects of prosociality towards ex-prisoners generalize to the U.S. context. In line with the Nigeria Study, reported prosocial behavioral intentions towards ex-prisoners were significantly higher in the affirmation group ( $M = 3.04$ ,  $SE = .05$ ) compared to the control group ( $M = 2.65$ ,  $SE = .05$ ;  $b = .4$ ,  $SE = .07$ ,  $p < .001$ ) (Figure 4, panel B).



**Figure 5: Donation behavior for control and affirmation groups (U.S.).** Error bars represent 95% confidence intervals. The treatment effect is significant at the .001 level as indicated by \*\*\*.

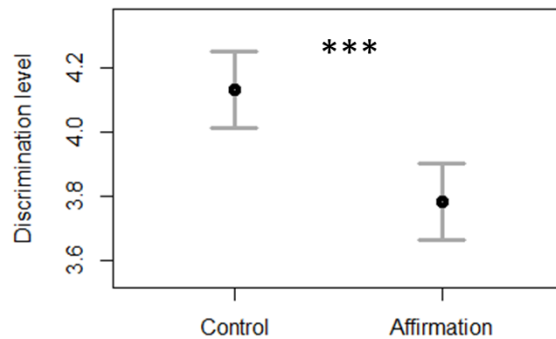
Furthermore, as in the Nigeria Study, results of the U.S. Study show a significant treatment effect of the affirmation intervention on interest and intention to engage in the tutoring program for ex-prisoners. Compared to the control group, participants in the affirmation group indicated significantly higher interest and intentions to participate in the tutoring program (affirmation group:  $M = 3.39$ ,  $SE = .05$ ; control group:  $M = 3.12$ ,  $SE = .05$ ;  $b = .28$ ,  $SE = .07$ ,  $p < .001$ ) (Figure 6).



**Figure 6: Intentions to engage in tutoring program for ex-prisoners for control and affirmation groups (U.S.).** Error bars represent 95% confidence intervals. The treatment effect is significant at the .001 level as indicated by \*\*\*.

*Discriminatory behavioral tendencies towards ex-prisoners.* Replicating results from the Nigeria Study, we find that engaging in the values affirmation exercise significantly reduced discriminatory behavioral tendencies towards ex-prisoners in our U.S. sample. Compared to control participants ( $M = 4.13$ ,  $SE = .06$ ), affirmed participants reported significantly lower discriminatory tendencies ( $M = 3.78$ ,  $SE = .06$ ;  $b = -.35$ ,  $SE = .09$ ,  $p < .001$ ) (Figure 7).





**Figure 7: Discrimination levels for control and affirmation groups (U.S.).** Error bars represent 95% confidence intervals. The treatment effect is significant at the .001 level as indicated by \*\*\*.

*General attitude towards ex-prisoners.* Lastly, in line with findings of the Nigeria Study, we observe high ratings of participant's overall attitude towards ex-prisoners and no significant treatment effect. Independent of treatment assignment, participants report strong agreement with the sentiment that ex-prisoners do deserve a second chance (affirmation group:  $M = 4.99$ ,  $SE = .04$ ; control group:  $M = 4.9$ ,  $SE = .04$ ;  $b = .09$ ,  $SE = .06$ ,  $p = .126$ ).

### **Generalizability of observed effects across countries**

The results presented above show that the values affirmation intervention was effective in both countries under investigation in promoting prosociality in general and towards ex-prisoners as well as in reducing discriminatory tendencies. In order to formally evaluate the generalizability of the affirmation effects across the two countries, we test for treatment by country interactions. We combine the two samples, add country as a dummy variable and conduct formal interaction analyses for our various dependent measures. No significant interactions emerged across all dependent measures (please

refer to Table 1 for regression results). Our findings speak to the similarity of the affirmation effects in both our samples. We show that a values affirmation intervention does not only successfully increase prosociality and decrease discrimination in both countries but furthermore that the magnitude of these effects is comparable across both countries. Our study thus provides strong evidence for the generalizability of the observed affirmation effects across Nigeria and the United States.

**Table 1: Treatment by country interaction analysis for combined Nigeria and U.S. samples.** The table presents regression results of the formal treatment by country interaction analyses for the five dependent measures in the combined dataset. Constant represents Nigeria and control group as the reference category. Interaction results are depicted in bold.

	Prosocial general	Prosocial ex-prisoner	Tutor	Discrimination	Attitude
Constant	4.577*** (0.068)	3.486*** (0.084)	4.000*** (0.080)	3.925*** (0.099)	5.186*** (0.067)
Treatment	0.497*** (0.098)	0.481*** (0.120)	0.278* (0.116)	-0.484*** (0.142)	0.073 (0.097)
Country	-0.850*** (0.080)	-0.840*** (0.098)	-0.884*** (0.094)	0.209 (0.115)	-0.283*** (0.079)
<b>Treatment*Country</b>	<b>-0.065 (0.114)</b>	<b>-0.084 (0.140)</b>	<b>-0.001 (0.135)</b>	<b>0.133 (0.166)</b>	<b>0.018 (0.113)</b>
N	1,494	1,487	1,481	1,485	1,482
R <sup>2</sup>	0.175	0.120	0.115	0.026	0.018
Adjusted R <sup>2</sup>	0.174	0.119	0.113	0.024	0.016
Residual Std. Error	0.979 (df = 1490)	1.197 (df = 1483)	1.148 (df = 1477)	1.409 (df = 1481)	0.962 (df = 1478)
F Statistic	105.493*** (df = 3; 1490)	67.689*** (df = 3; 1483)	63.905*** (df = 3; 1477)	13.095*** (df = 3; 1481)	8.800*** (df = 3; 1478)

\* p < .05; \*\* p < .01; \*\*\* p < .001

## Mediation analysis

Based on findings by Schneider and Weber (2018), we hypothesized that engaging in the values affirmation exercise would increase feelings of positive self-regard and that positive self-regard would mediate the effect of the affirmation intervention on prosocial motivation in general and specifically towards ex-prisoners as

well as on our measure of discrimination. For both the Nigeria and U.S. samples we find that affirmed participants report significantly higher positive self-regard compared to control participants, indicating that the values affirmation intervention indeed fostered positive self-directed emotions in both countries (Table 2).

**Table 2: Levels of positive self-regard for Nigeria and U.S. samples.**

	descriptives				linear regression		
	<i>M</i> <sub>affirmation</sub>	<i>SE</i> <sub>affirmation</sub>	<i>M</i> <sub>control</sub>	<i>SE</i> <sub>control</sub>	<i>b</i>	<i>SE</i>	sig.
Nigeria	5.86	0.09	5.22	0.11	0.64	0.14	< .001
U.S.	5.43	0.05	5.01	0.06	0.42	0.08	< .001

To test our hypothesis that these increased feelings of positive self-regard mediate the effect of the values affirmation intervention on prosocial motivation and reduced discrimination, we conduct formal mediation analyses for our various dependent measures using the *mediation* package in R (Tingley, Yamamoto, Hirose, Keele, & Imai, 2014). Parameter estimates are based on the bootstrapping method, which does not assume a particular sampling distribution for the indirect effect but which generates a data driven sampling distribution. This approach allows for an accurate and statistically powerful test of the significance of the indirect effect (Bolger & Amarel, 2007). All reported results are based on 5,000 bootstrapped samples.

Results overall support our hypothesis and largely replicate findings by Schneider and Weber (2018). In the U.S. sample positive self-regard mediates the effect of the values affirmation intervention on all five dependent measures for which a significant treatment effect emerged: prosocial behavioral intentions towards unspecific others, donation to charity, prosocial behavioral intentions towards ex-prisoners, including intentions to engage in the tutoring program, and discrimination. In the Nigeria sample

we observe a significant mediation of positive self-regard on three of the four dependent measures for which we observed a significant treatment effect: general prosocial behavioral intentions, prosocial behavioral intentions towards ex-prisoners, and discrimination. The mediation effect on intentions to engage in the tutoring program did not reach statistical significance. Please refer to Table 3 for complete mediation statistics.

**Table 3: Mediation results for Nigeria and U.S. samples.**

DV		indirect effect			
		<i>b</i>	95% CI	sign.	prop. mediated
Nigeria	prosocial BIs	0.12	[0.06, 0.19]	< 0.001	0.24
	prosocial BIs ex-prisoners	0.12	[0.05, 0.21]	< 0.001	0.25
	engagement tutoring program	0.04	[-0.01, 0.11]	0.11	0.14
	discrimination	-0.07	[-0.16, -0.01]	0.02	0.15
U.S.	prosocial BIs	0.09	[0.05, 0.13]	< 0.001	0.2
	donation behavior	0.09	[0.02, 0.18]	< 0.001	0.12
	prosocial BIs ex-prisoners	0.05	[0.02, 0.08]	< 0.001	0.12
	engagement tutoring program	0.04	[0.02, 0.07]	< 0.001	0.14
	discrimination	-0.04	[-0.08, -0.02]	< 0.001	0.12

## Discussion

Across two studies in two different cultural contexts we replicate past findings that a values affirmation intervention can promote prosociality. We also replicate findings that identified positive self-regard as a mediator in the effect. Importantly, we extend past work to explore the effectiveness of values affirmation in a new, previously untested domain. We provide evidence that a values affirmation intervention can lower discriminatory behavioral tendencies and foster prosocial motivation towards ex-prisoners.

The presented body of work replicates the general prosociality enhancing effects of values affirmation evidenced by Schneider and Weber (2018). We replicate the effect

conceptually through measures of prosocial behavioral intentions across two cultural contexts, as well as directly by testing the same behavioral measure as used in Schneider and Weber (2018): donation to charity. As reported in Schneider and Weber (2018), we find a significant treatment effect such that affirmed participants indicate higher intentions to invest time and personal funds to help others and donate significantly more to charity compared to control participants. The magnitude of the donation effect in the current study is comparable to findings by Schneider and Weber (2018). Our work thus strengthens the empirical evidence base of the reported effect that values affirmation can be effective at enhancing prosociality generally, towards distant and unknown others.

We also replicate reported mediation effects of positive self-directed emotions in this context (Schneider & Weber, 2018). Positive self-regard mediates the intervention effect on donations to charity as well as on prosocial behavioral intentions in the U.S. and in Nigeria. Furthermore, we provide evidence that positive self-regard also mediates the affirmation effect in the context of ex-prisoners for five of our six dependent measures of discrimination and prosociality towards ex-prisoners across both countries. Overall, our study not only further supports positive self-regard as a mediator of the affirmation effect in the U.S. in the domain of prosocial behavior generally, but extends it to a further cultural context as well as to a further domain of prosocial behavior, i.e., towards ex-prisoners.

The main focus of this work was to extend previously shown prosociality-enhancing effects of values affirmation (Schneider & Weber, 2018) to situations in which members of marginalized societal groups are the recipients of the prosocial action and to test the generalizability of the effects cross-culturally. Specifically, we set out to test

whether a values affirmation intervention can lower discrimination against ex-prisoners and boost prosociality towards them in Nigeria and the United States. We thereby critically add to the literature on values affirmation intervention effects which has so far largely ignored the African cultural context, and specifically Nigeria.

Our results show that values affirmation is indeed not only effective in promoting prosociality towards unknown and distant others but also when geared at members of certain societal groups towards whom the public may express discriminatory tendencies. We find that in Nigeria engaging general members of the public in a values affirmation exercise can significantly enhance prosocial motivation towards ex-prisoners. Affirmed participants exhibit higher inclinations to help ex-prisoners, for instance, by participating in a tutoring program for ex-prisoners or by giving money to assist them, compared to members of the public who were not affirmed. We also find that discriminatory behavioral tendencies towards ex-prisoners, such as not employing an ex-prisoner solely on the basis of criminal history or not being comfortable with having an ex-prisoner as a neighbor, are significantly lower in affirmed participants compared to non-affirmed ones. We replicate these findings in a U.S. sample. Results for all dependent measures in the U.S. Study are in line with the described findings in Nigeria. The treatment by country interaction analyses on the combined data set did not reveal any significant interactions. We hence provide strong support for the generalizability of our observed effects across two different cultural contexts.

With regards to general attitude towards ex-prisoners, we find that participants from our samples in both countries expressed similarly positive attitudes. Independent of treatment assignment, participants showed high agreement with the notion that ex-

prisoners deserve a second chance. With regards to Nigeria, this finding is congruent with work that points out the restorative culture and traditions of Nigeria (Omale, 2011). For the U.S. as well, our findings fit to accounts that have pointed to a strong belief in redemption within U.S. society (Hirschfield & Piquero, 2010). The ideal of opportunity and second chances, consistent with the idea of the American Dream, is also reflected for instance in the wording of laws, such as the ‘Second Chance Act’ which enhanced reentry services for ex-prisoners (Braga, Piehl, & Hureau, 2009). Notably, our findings also show that general positive and non-discriminatory attitudes on a high and abstract level do not necessarily reflect how people behave and act when it touches their lives concretely. Despite the fact that participants overall expressed a positive attitude towards ex-prisoners, we do find that non-affirmed participants exhibit higher discriminatory tendencies and less prosocial motivation compared to affirmed participants, as for instance with regards to employment decisions, the investment of personal time and funds to assist ex-prisoners, or personal interactions with ex-prisoners. For these concrete instances we find room for our intervention to positively shift discriminatory tendencies and promote prosociality.

Our findings are aligned with construal level theory (Trope & Liberman, 2010; Trope, Liberman, & Wakslak, 2007). The question whether ex-prisoners deserve a second chance is very abstract and removed from the participants’ lives. It does not involve a concrete action on the part of the participant and is thus removed from direct experience (Trope et al., 2007). However, when prompting participants to think about what they would do in concrete situations, such as when deciding whether to hire an ex-prisoner or not, the construal level is close to the participants. Participants may evoke

considerations of the ‘here and now’ and picture the situation more richly and more contextualized (Trope et al., 2007). Kivetz and Tyler (2007) argue that high-level construal encourages the expression of an idealistic (value-oriented) self, for instance in our context one that does not discriminate, while low-level construal encourages the expression of a pragmatic self, as for example practical considerations and challenges associated with hiring an ex-prisoner as in our study.

Our work is the first to test a values affirmation intervention to reduce discrimination against ex-prisoners and to increase the general public’s prosocial motivation towards them. Although values affirmation interventions to benefit individuals have been tested extensively in the U.S. in various domains such as academic performance (Cohen et al., 2006; Cohen et al., 2009), health behavior change (Cooke et al., 2014; Epton & Harris, 2008 ; Logel & Cohen, 2012; Sherman & Cohen, 2006), reduced stress (Sherman, Bunyan, Creswell, & Jaremka, 2009), increased well-being (Nelson et al., 2014; Ryan & Deci, 2001) and more recently with regards to promoting prosocial behavior (Lindsay & Creswell, 2014; Schneider & Weber, 2018; Thomaes et al., 2012), no study has assessed effects with regards to marginalized and stigmatized societal groups such as ex-prisoners. Our work thus crucially extends knowledge on the applicability of values affirmation interventions and underlying theory. At the same time it presents novel insights into a potential avenue for reducing discrimination and promoting prosociality towards ex-prisoners in an applied context.

The application potential for a values affirmation intervention and its potential impact are manifold. Values affirmation interventions could help to foster positive personal contact between the public and ex-prisoners. Our results suggest that values



affirmation could be used to encourage the public to engage in a tutoring program for ex-prisoners. Work on the influence of contact in reducing prejudice and discrimination has suggested that personal contact can reduce discriminatory attitudes and foster social acceptance (Allport, 1954; Al Ramiah & Hewstone, 2013; Dovidio, Gaertner, & Kawakami, 2003; Hewstone, Cairns, Voci, Hamberger, & Niens, 2006). A recent working paper focusing on the Nigerian context suggests that positive social contact can increase generosity and decrease discrimination toward religious out-group members in Nigeria (Scacco & Warren, 2016). Extrapolating from these findings to the domain of ex-prisoners, this evidence suggests that engaging the public in programs that offer direct social contact, such as the tutoring program we propose, may have beneficial effects on discrimination reduction. Values affirmation interventions could be used to encourage members of the public to participate in such programs. Furthermore, research has highlighted the important role that mentoring plays for ex-prisoners on their path to societal reintegration (Celinska, 2000; Johnson, 2008). Societies are struggling with a shortage of mentors for ex-prisoners (Johnson, 2008). A values affirmation intervention could be used to promote willingness by the general public to engage in volunteer activities and to become a mentor for an ex-prisoner.

Engaging the public in a values affirmation intervention could also support the restorative justice movement by making the public more open and receptive towards its ideas and principles. It encompasses restorative processes for victims and offenders involving those affected in the justice process. It connects the offender and the community to acknowledge wrongdoings and address them in a meaningful and constructive manner to make peace, reconcile and prevent reoccurrence (Gavrielides,

2008; Morris, 2002). This process is inhibited by discriminatory attitudes and behaviors towards ex-prisoners. Lowering discriminatory tendencies towards ex-prisoners through values affirmation may break down these barriers. A values affirmation intervention may thus help to make the general public more receptive towards restorative justice oriented efforts and programs.

Our work is of high applied relevance. It identifies a potentially powerful method for reducing discrimination against ex-prisoners and encouraging prosocial behavior towards them. Achieving this goal can support effective reintegration thereby furthering social justice and reducing conflict and costs to society. Interventions may take place in workplace training programs, educational settings, such as schools and universities, or during sensitization, community engagement, and advocacy campaigns by NGOs. Delivery channels may also include, for instance, phone applications in game-like settings or multimedia campaigns (see Acosta et al., 2014 or Collins, Wong, Cerully, Schultz, & Eberhart, 2012 for a review). Exact strategies will need to be tailored to the economic, social, and cultural environment in which the intervention is to be applied. A suggested next step would be to test our findings in a longitudinal setting in which behavioral intentions as well as behaviors can be monitored over time. For instance, it is conceivable to set up a tutoring program for ex-prisoners in collaboration with a local agency/NGO, such as the one we propose in our study, and measure the public's actual program participation following a values affirmation intervention at the recruitment stage versus a non-self-affirmative recruitment process.

## **Conclusion**

In conclusion, our work points towards a promising avenue for fostering prosociality towards ex-prisoners and reducing discrimination towards them. We test our intervention in two countries which would highly benefit from a strategy to achieve this goal. Our work is thus of high applied potential as it provides insights into a strategy for tackling societal challenges countries around the world face. Applying values affirmation interventions on a large scale, for instance as part of employer training or campaigns in educational settings, to change how the public perceives and treats ex-prisoners, holds the potential to positively affect the mental well-being of ex-prisoners and support reintegration into society. Positive downstream effects may include reduced recidivism, conflict, and costs to society, along with more just and non-discriminating social environments. In this sense, values affirmation could help to foster positive social change to tackle one of the biggest social challenges nations face. Future research should continue to investigate this promising route further in an effort to promote social justice and peaceful societies.

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Reducing discrimination and fostering prosociality towards ex-prisoners in Nigeria and  
the U.S. through values affirmation

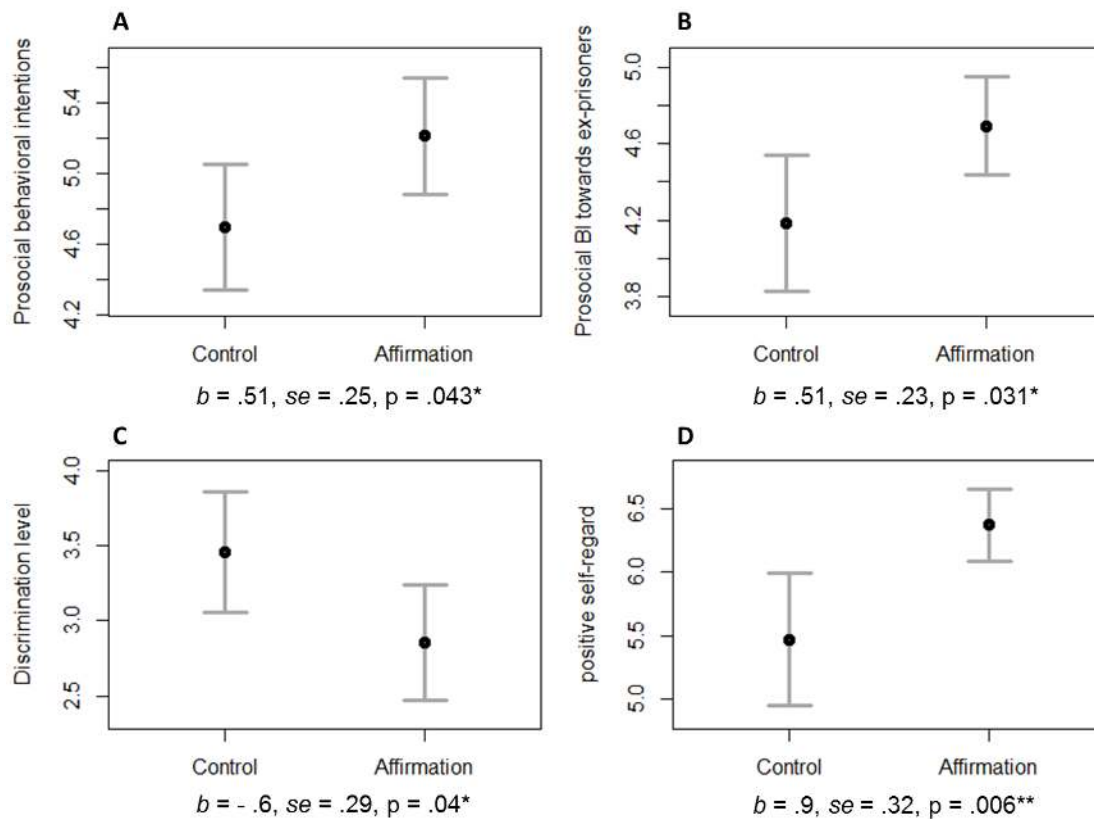
**Supplementary Information**

**Nigeria Study**

**Analysis of quantitative pilot**

A quantitative pilot was conducted with the purpose of refining the survey (69 participants;  $n_{\text{affirmation}} = 32$ ,  $n_{\text{control}} = 37$ ; 36.23% females,  $M_{\text{age}} = 36.38$ ,  $SD_{\text{age}} = 11.04$ ). Adjustments to question wording and survey content were made after the pilot. The pilot assessed general prosociality, prosociality towards ex-prisoners, and discriminatory behavioral tendencies towards ex-prisoners. The measure of *general prosociality* consisted of three sub-items: ‘Would you render any kind of help to someone in need?’, ‘Would you give money to someone in need?’, and ‘How much of your free time over the next three months do you intend to spend helping someone in need?’ (Cronbach’s  $\alpha = .71$ ). *Prosociality towards ex-prisoners* was measured via four sub-items: ‘Would you render any kind of help to an ex-prisoner?’, ‘How much of your free time would you spend on helping an ex-prisoner?’, ‘Would you give money to an ex-prisoner to assist him or her?’, and ‘How much of your available money would you give to an ex-prisoner?’ (Cronbach’s  $\alpha = .81$ ). *Discriminatory behavioral tendencies towards ex-prisoners* were probed via three sub-items: ‘Imagine you are the CEO of a company. Would you employ an ex-prisoner if he or she had the same qualifications as other candidates?’, ‘Would you feel comfortable having an ex-prisoner as your neighbor?’, and ‘If an ex-prisoner approached you for help because he or she is discriminated against by his/her employer, would you help him or her?’ (Cronbach’s  $\alpha = .71$ ). Furthermore, the

pilot included a measure of *positive self-regard*. Participants were asked to indicate to what extent they felt ‘at peace with themselves’ and ‘good about themselves’ while engaging in the affirmation[control] task (Cronbach’s  $\alpha = .78$ ). All measures were answered on 7-point Likert scales ranging from ‘none’ to ‘all’, ‘never’ to ‘always’, or ‘not at all’ to ‘completely’. Results are presented in Figure 1.



**Figure S1. Results of quantitative pilot.** Prosocial behavioral intentions in general (A), prosocial behavioral intentions towards ex-prisoners (B), discrimination level (C), and level of positive self-regard (D) for control and affirmation groups. Linear regression results per outcome measure are displayed below each panel plot. Error bars represent 95% confidence intervals.

**Table S1. Demographic characteristics of the study sample (Nigeria Study).**

Variable	Nigeria Study ( <i>N</i> = 414)
Gender, %	
Females	44.44
Males	49.76
Age, <i>M</i> ( <i>SD</i> )	27.46 (8.33)
Education, %	65.22
Income, %	38.16

Note: Due to some participants choosing not to indicate gender, percentages do not total to 100.

\*Educational Attainment = *at least Bachelor's Degree (or studying towards it)*.

\*Average monthly family income, or personal income if living alone = *NGN 80,000 or over (~ 220 USD in February 2018)*.

## Supplementary Measures

### Intervention prompts

#### Affirmation group thinking and writing prompt

There are many things that make life precious and worthwhile. Below is a list of behaviors that can be important to a person and can make a person happy. The list below shows different behaviors by which people try to live their lives. For example, kindness might be important for some people. That is, they may try to be kind in all they do.

Compassion	Forgiveness	Kindness	Generosity	Goodness
Mercy	Love			

Please select one behavior from the list that is most important to you and write it on the line provided. Even if more than one behavior is important to you please select just one.

From the list, the most important behavior to me is:

---

Please take your time to really think about the following questions. Then write your answers on the lines provided below each question. Please feel free to go into as much detail as you want. There are no right or wrong answers, please write whatever comes to your mind and is meaningful to you. Please do not worry about grammar or correct spelling.

Please think about the behavior you chose from the list above and write what it means to you and why it is important to you.

*[space provided for answer]*

How does this behavior you chose guide your life? How has it influenced things you have done and how do you practice it in your everyday life?

*[space provided for answer]*

Please think about a time when you had the opportunity to really show the behavior you chose from the list towards other people and write about it.

*[space provided for answer]*

Why do you like the behavior you chose in yourself?

*[space provided for answer]*

### **Control group thinking and writing prompt**

In the following we have a couple of questions for you regarding the places where you buy your things, like markets or grocery stores.

Please think about each question and then write your answers on the lines provided below each question. For any of the questions, please feel free to go into as much detail as you want. Please do not worry about grammar or correct spelling.

Where do you go to buy your things? Please tell us the names and locations of the market(s) or store(s) you go to. Where are they located?

*[space provided for answer]*

What things do you buy from where? Where do you buy your food stuff? Where do you buy other things, like clothes or soap?

*[space provided for answer]*

Please think of the store or market that you go to most often to buy your food stuff. Please describe the environment of that store or market. How does the store or the market look like? What is the layout of the market or the store, meaning in what section of the market or the store can you find what type of food stuff?

*[space provided for answer]*

How big is the market or store where you buy your food stuff? What day of the week do you most often go there?

*[space provided for answer]*

### **Mediator measures**

#### **Positive self-regard measure sub-items**

When thinking about the questions on the previous two pages, the ones on behaviors [where you buy your things], and writing your answers, how did you feel?

Did you feel at peace with yourself?

Did you feel good about yourself?

*[7-point Likert response scales; range 'not at all' to 'completely']*

## **Outcome measures**

### **General prosocial behavioral intention measures**

How often, over the next three months, do you intend to render any kind of help to someone in need?

*[7-point Likert response scale; range 'never' to 'always']*

How often, over the next three months, do you intend to give money to someone in need?

*[7-point Likert response scale; range 'never' to 'always']*

How much of your free time over the next three months do you intend to spend helping someone in need?

*[7-point Likert response scale; range 'none' to 'all']*

If someone in need approached you right now asking for assistance, how much of your available money would you give?

*[7-point Likert response scale; range 'none' to 'all']*

### **Ex-prisoner oriented prosocial behavioral intention measures**

How often, over the next three months, do you intend to render any kind of help to an ex-prisoner?

*[7-point Likert response scale; range 'never' to 'always']*

How often, over the next three months, do you intend to give money to an ex-prisoner to assist him or her?

*[7-point Likert response scale; range 'never' to 'always']*

How much of your free time over the next three months do you intend to spend helping an ex-prisoner?

*[7-point Likert response scale; range 'none' to 'all']*

If an ex-prisoner approached you right now asking for assistance, how much of your available money would you give?

*[7-point Likert response scale; range 'none' to 'all']*



### **Tutoring program measures**

If there was a tutoring program for ex-prisoners in which members of the general public, like you, could share their knowledge and skills with ex-prisoners to help them learn and advance their skills, would you be interested in participating in it? That is, would you be willing to tutor an ex-prisoner and share your knowledge and skills with him or her?

How much of your free time would you spend on tutoring ex-prisoners?

*[7-point Likert response scale; range 'none' to 'all']*

Would you recommend the tutoring program for ex-prisoners to your friends? That includes explaining the program to them and trying to get them interested to participate as well.

How much of your free time would you invest on recommending the program to your friends?

*[7-point Likert response scale; range 'none' to 'all']*

### **Discrimination measures**

Imagine you are the CEO of a company. Would you employ an ex-prisoner if he or she had the same qualifications as other candidates?

*[7-point Likert response scale; range 'never' to 'always']*

Would you feel comfortable having an ex-prisoner as your neighbor?

*[7-point Likert response scale; range 'not at all' to 'completely']*

If an ex-prisoner approached you for help because he or she is discriminated against by his/her employer, would you help him or her?

*[7-point Likert response scale; range 'never' to 'always']*

### **Attitude measure**

What do you think of ex-prisoners? Please tick which statement you agree with the most:

- ☐ They are people like you and me and deserve a second chance
- ☐ They are criminals and always will be and do not deserve a second chance

How strongly do you agree with the statement you just picked?

*[3-point Likert response scale; 'not very strongly', 'strongly', 'very strongly']*

## U.S. Study

**Table S2. Demographic characteristics of the study sample (U.S. Study).**

Variable	U.S. Study ( <i>N</i> = 1,093)
Gender, %	
Females	56.08
Males	43.09
Age, <i>M</i> ( <i>SD</i> )	35.41 (11.24)
Education, %	52.24
Income, %	52.42
Polit. Affiliation, %	
Democrat	41.17
Republican	21.41
Independent/Other	32.11

Note: Due to some participants choosing not to indicate political affiliation or gender, percentages do not total to 100.

\*Educational Attainment = *at least Bachelor's Degree*.

\*Household income before taxes during past 12 months = *\$50,000 or over*

All participants had a 95% or higher approval rating according to the screening procedures of Amazon's Mechanical Turk.

**Table S3. Average donations by charity.**

Average donations by charity in USD						
	<i>M</i> <sub>affirmation</sub>	<i>SE</i> <sub>affirmation</sub>	<i>M</i> <sub>control</sub>	<i>SE</i> <sub>control</sub>	<i>M</i> <sub>total</sub>	<i>SE</i> <sub>total</sub>
American Cancer Society	1.94	0.11	1.77	0.1	1.85	0.08
World Wildlife Fund	1.52	0.09	1.22	0.08	1.37	0.06
Amnesty International	1.28	0.09	0.99	0.07	1.13	0.06

## Supplementary Measures

### Intervention prompts

#### Affirmation group thinking and writing prompt

There are many things that make life precious and worthwhile. Below is a list of values that can be important to a person and can make a person happy. The list shows different values by which people try to live their lives. For example, kindness might be important for some people. That is, they may try to be kind in all they do.

Compassion	Forgiveness	Kindness	Generosity	Goodness
Mercy	Love			

Please select one value from the list that is most important to you, and write it in the space provided. Even if more than one value is important to you please select just one.

From the list, the most important value to me is:

---

Please take your time to really think about the following questions. Then write your answers in the spaces provided below each question. Please feel free to go into as much detail as you want. There are no right or wrong answers, please write whatever comes to your mind and is meaningful to you. Please do not worry about grammar or correct spelling.

Please think about the value you chose from the list above and write what it means to you and why it is important to you.

*[space provided for answer]*

How does this value you chose guide your life? How has it influenced things you have done and how do you practice it in your everyday life?

*[space provided for answer]*

Please think about a time when you had the opportunity to really show the value you chose towards other people and write about it.

*[space provided for answer]*

Why do you like the value you chose in yourself?

*[space provided for answer]*

### **Control group thinking and writing prompt**

In the following we have a couple of questions for you regarding the stores where you buy things, like department stores or grocery stores.

Please think about each question and then write your answers in the spaces provided below each question. For any of the questions, please feel free to go into as much detail as you want. Please do not worry about grammar or correct spelling.

Where do you go to buy the different things you need, food as well as non-food items? Please tell us the names of the stores you go to most frequently.

*[space provided for answer]*

What things do you usually buy from what store? Where do you buy your food items? Where do you buy other non-food items?

*[space provided for answer]*

Please think of the store that you go to most often to buy your food items. Please describe the environment of that store. What does the store look like? What is the layout of the store, meaning in what section of the store can you find what items?

*[space provided for answer]*

How big is the store where you buy your food items? What day of the week do you most often go there?

*[space provided for answer]*

### **Mediator measures**

#### **Positive self-regard measure sub-items**

When thinking about the questions on the previous page and writing your answers, how did you feel?

Did you feel at peace with yourself?

Did you feel good about yourself?

*[7-point Likert response scale; range 'not at all' to 'completely']*

## **Outcome measures**

### **General prosocial behavioral intention measures**

How often, over the next three months, do you intend to help someone in need?

*[7-point Likert response scale; range 'never' to 'always']*

How often, over the next three months, do you intend to give money to someone in need?

*[7-point Likert response scale; range 'never' to 'always']*

How much of your free time over the next three months do you intend to spend helping someone in need?

*[7-point Likert response scale; range 'none' to 'all']*

If someone in need approached you right now asking for assistance, how much of your available money would you give?

*[7-point Likert response scale; range 'none' to 'all']*

## Donation measure

As an extra "thank you" for participating in our research today, we will enter you into a lottery to win a \$10 bonus. One study participant will be chosen at random to receive this bonus (which will be given to you via MTurk).

We also would like to give you an opportunity to donate some or all of the bonus to a charitable organization, if you are the lottery winner. You may split the \$10 between yourself and a selection of charities however you want to, using the form on the next page. Any money you allocate to any of the charities will be directly donated on your behalf by the research team.

The charities you may donate to today will be shown on the next page.

*[page break]*

The three organizations that you have an opportunity to donate to today are the American Cancer Society, the World Wildlife Fund, and Amnesty International. Below are short descriptions of each of the organizations.

The **American Cancer Society**'s mission is to free the world from cancer and to save lives. Founded in 1913 the American Cancer Society is funding and conducting research, sharing expert information, supporting patients, and spreading the word about prevention, to allow people to live longer – and better. If you'd like to learn more about the organization, their website is: <https://www.cancer.org/>



The **World Wildlife Fund**'s mission is to conserve nature and reduce the most pressing threats to the diversity of life on Earth. For 50 years, WWF has been protecting the future of nature. As the world's leading conservation organization, WWF works in 100 countries challenging the threats to nature, and helping to ensure its ability to provide – for the sake of every living thing, including ourselves. If you'd like to learn more about the organization, their website is: <https://www.worldwildlife.org/>



**Amnesty International** is a human rights organization and global movement of more than 7 million people campaigning for a world where human rights are enjoyed by all. Through detailed research and determined campaigning Amnesty International helps to fight abuses of human rights worldwide, bringing torturers to justice, changing oppressive laws, and freeing people jailed just for voicing their opinion. If you'd like to learn more about the organization, their website is: <https://www.amnesty.org/en/>



You may split the \$10 between the organizations and yourself in whatever proportion you wish to. Please note that the total amount must add up to exactly \$10. Remember that you will be paid your MTurk compensation regardless of whether you win the lottery or not.

Donate to American Cancer Society : \_\_\_\_\_

Donate to World Wildlife Fund : \_\_\_\_\_

Donate to Amnesty International : \_\_\_\_\_

Keep for myself : \_\_\_\_\_

Total : \_\_\_\_\_ [*automatically calculated to ensure total amount is \$10*]

### **Ex-prisoner oriented prosocial behavioral intention measures**

How often, over the next three months, would you help an ex-prisoner?

*[7-point Likert response scale; range 'never' to 'always']*

How often, over the next three months, would you give money to an ex-prisoner to assist him or her?

*[7-point Likert response scale; range 'never' to 'always']*

How much of your free time over the next three months would you spend on helping an ex-prisoner?

*[7-point Likert response scale; range 'none' to 'all']*

If an ex-prisoner approached you right now asking for assistance, how much of your available money would you give?

*[7-point Likert response scale; range 'none' to 'all']*

### **Tutoring program measures**

If there was a tutoring program for ex-prisoners in which members of the general public, like you, could share their knowledge and skills with ex-prisoners to help them learn and advance their skills, would you be interested in participating in it? That is, would you be willing to tutor an ex-prisoner and share your knowledge and skills with him or her?

How much of your free time would you spend on tutoring ex-prisoners?

*[7-point Likert response scale; range 'none' to 'all']*

Would you recommend the tutoring program for ex-prisoners to your friends? That includes explaining the program to them and trying to get them interested to participate as well.

How much of your free time would you invest on recommending the program to your friends?

*[7-point Likert response scale; range 'none' to 'all']*



### **Discrimination measures**

Imagine you are the CEO of a company. Would you employ an ex-prisoner if he or she had the same qualifications as other candidates?

*[7-point Likert response scale; range 'never' to 'always']*

Would you feel comfortable having an ex-prisoner as your neighbor?

*[7-point Likert response scale; range 'not at all' to 'completely']*

If an ex-prisoner approached you for help because he or she is discriminated against by his/her employer, would you help him or her?

*[7-point Likert response scale; range 'never' to 'always']*

### **Attitude measure**

What do you think of ex-prisoners? Please tick which statement you agree with the most:

- ☐ They are people like you and me and deserve a second chance
- ☐ They are criminals and always will be and do not deserve a second chance

How strongly do you agree with the statement you just picked?

*[3-point Likert response scale; 'not very strongly', 'strongly', 'very strongly']*