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Stereotyping, Prejudice, and the Role of Anxiety for Compensatory Control

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Supplementary Materials: Data, Materials [see Index of Supplementary Materials]

Abstract

This work examines the influence of personal control and anxiety on stereotyping and prejudice. In two experiments, personal control was manipulated in an autobiographical experience task. In Experiment 1, participants then completed measures of implicit and explicit gender stereotypes. In Experiment 2, implicit and explicit racial prejudice was assessed. Anxiety was tested as a possible mediator of the relationship between personal control and stereotyping and prejudice, respectively. Low personal control was associated with greater gender stereotyping and racial prejudice in explicit measures. Anxiety mediated the relationship between personal control and stereotyping but not between personal control and prejudice. Also, ingroup identification was found to moderate some of the relations between personal control, anxiety and stereotyping and prejudice. The results provide support for stereotyping and prejudice as compensatory control mechanisms, but evidence is mixed regarding the role of anxiety in mediating the processes.

Keywords

stereotypes, prejudice, anxiety, personal control, compensatory control theory, group-based control, implicit association test

The search term “uncontrollable world” returns hundreds of millions of results on online search engines that include blog posts, self-help books, conspiracy theories, and many examples of events described as uncontrollable. Many of these results reflect the fact

that, in more recent times, people have been perceiving the world they live in as more and more complex and overwhelming, because societal, economical, and ecological issues seem increasingly uncontrollable to them (Heitmeyer, 2018). Arising from discussions and popular literature, there is a growing body of scientific research on personal control, especially with regard to dealing with the experience of low personal control.

The current research aims at adding to this line of research by proposing stereotyping and prejudice as means to restore an individual's sense of personal control and begins with an outline of the theoretical bases of research on personal control. Drawing on this theoretical background, the functions of stereotyping and prejudice and their connections with personal control are reviewed. Then, the impact of low personal control on gender stereotyping and racial prejudice is examined in two experiments.

Dealing With Low Personal Control

To have a sense of control and to perceive the world as orderly, structured, and predictable is a basic human need (Neuberg & Newsom, 1993; Pittman & Zeigler, 2007). Many theories on human needs feature aspects of personal control, such as need for order in Murray's (1938) theory of manifest needs or controlling in core social motives theory (Fiske, 2003). When people are not in control of their environment, events that occur around them, or even their own feelings and behaviors, they have to cope with their experiences of low personal control to restore a sense of control. Different theoretical accounts provide frames for the strategies people use to restore their personal control.

The two-process model of perceived control (Rothbaum et al., 1982) proposes that people try to restore lost control in two ways: by either bringing the environment in line with their wishes (primary control), or by bringing themselves in line with the environment and accommodating themselves to the circumstances (secondary control). Primary control is the kind of control we usually think of as actually exerting control, that is, by changing situations or circumstances. Secondary control, however, implies that people cannot change their environment, but only themselves. It might be perceived as not actually regaining control, but it serves exactly this purpose: It helps individuals to gain a sense of control, for example, by inhibiting unfulfillable expectations, by perceiving illusory control through the ascription of "chance" to others, or by achieving vicarious control by attributing control to powerful others they identify with, such as powerful leaders. Thus, secondary control can be achieved via specific attributions of control to powerful others and also by affirming nonspecific structure (Landau et al., 2015; Whitson & Galinsky, 2008).

Mechanisms of secondary control are also featured in compensatory control theory (CCT; Kay et al., 2008, 2009): This theory postulates that people compensate for low personal control by increasing their confidence in "external systems that impose order upon the world," for example, by embracing ideologies that emphasize personal, societal, or religious control (Kay & Eibach, 2013). By doing so, they are supposed to alleviate

anxieties that arise from experiencing randomness, disorder, and low personal control. Examples of compensatory control mechanisms are believing in a controlling god and supporting one's own government. These two mechanisms have been demonstrated in several studies: After recalling events in which people had experienced low personal control, they reported increased support for their governments' decisions or their belief in a controlling god (Kay et al., 2008). Also, when primed with words representing randomness—compared to being primed with negative words—people reported increased belief in supernatural control, such as god or karma (Kay et al., 2010). Other examples for compensatory control are relying on metaphysical beliefs (Wang et al., 2012) or endorsing social hierarchies (Friesen et al., 2014).

A third perspective on control comes from the model of group-based control (Fritsche et al., 2011, 2013). Here, restoration of threatened personal control is also thought to occur on the level of the social self. This can be achieved via ethnocentric thinking, for example, by complying to ingroup norms, identifying with a high agency ingroup, and self-stereotyping.

Considering these different, yet overlapping theories, Stollberg et al. (2017) proposed an integrative two-process model of control restoration in which they distinguish between primary, extended primary, and secondary control. They argue that in terms of a group-based account, vicarious control cannot only be considered as secondary, but as extended primary control: As definitions of the self are not restricted to the question of who "I am," but can include who "we are," the authors propose to define vicarious control as extended primary control that occurs through the social self. This extended primary control can, for example, be achieved by supporting powerful, controlling external institutions (a mechanism considered as compensatory or secondary in the former theories on control restoration). According to this account, compensatory control is always secondary, and vicarious control is not categorized as compensatory, but as extended primary control.

Stereotyping, Prejudice, and Personal Control

In addition to the examples outlined above, the current research considers stereotyping and prejudice as means for control restoration. As will be shown, they could serve as compensatory control by providing (a) secondary control, as they might operate to perceive the world as predictable and structured, and (b) extended primary control, as some forms of stereotyping might provide vicarious control[1].

Stereotypes have been defined as beliefs associated with a category (i.e., a social group), exaggeratingly reflecting group attributes, and justifying behavior towards those groups (Allport, 1954). On the cognitive-individual level, they help to create a sense of

1) As the current research focuses on the question whether stereotyping and prejudice function as means to compensate for low personal control, I will refer to both as compensatory control.

a complex world by systematizing and simplifying information from the social environment, and they help to defend one's value systems (Dovidio et al., 2010; Tajfel, 2001). On the social level, they contribute to group ideologies as they explain and validate social actions, and they serve to differentiate one's own group positively from outgroups (Tajfel, 2001). Given these functions, stereotyping and prejudice might as well help individuals to cope with low personal control, as structure and simplicity help them to perceive the social environment as more orderly and predictable. Stereotyping has only recently been tested as a means to compensate for low personal control: In four studies, Ma et al. (2019) analyzed the impact of both measured and manipulated personal control on gender and occupational stereotypes. They found that people who experienced a situational or chronic lack of personal control expressed stronger stereotypes.

Findings from sociological surveys hint at prejudice as another potential means to cope with low personal control: Perceived control loss correlates with derogation of minorities among large samples of the German population (Heitmeyer, 2018). In these surveys, however, control loss is only assessed on the societal level—as a sense of a disintegrated society—and not as personal control. Also conceptually related to prejudice, blaming appears to be another possibility to deal with perceptions of low personal control: Threat to personal control by an economic crisis, for example, was shown to be reduced by blaming outgroups to be responsible (Bukowski et al., 2017). The only research to my knowledge that relates personal control to prejudice examined the role of perceived control for the effects of threat on prejudice (Greenaway et al., 2014). In three studies, it was shown that personal control moderated the effects of threat on prejudice. If people felt threatened, a lack of personal control increased their prejudice: Whereas terrorist threat increased the desire to exclude immigrants in participants experiencing low personal control, threat did not affect attitudes towards immigration in persons experiencing high personal control. The same pattern was observed in all experiments, even if perceived control was unrelated to the imagined threat (Greenaway et al., 2014). However, in these studies, personal control was only established as a condition for threat to evoke prejudice, not to foster prejudice by itself. Also, the question remains open whether unspecific control threat also affects prejudice that is unrelated to the source of the potential control loss.

The Role of Anxiety

Deprivation of personal control may not only trigger efforts to restore control, it can also have various emotional consequences, such as anger (Beisswingert et al., 2015) or a negative mood (Bukowski & Kofta, 2017). It is even related to depression when experienced over a longer period of time (e.g. Hiroto & Seligman, 1975; Miller & Seligman, 1975). In CCT, another emotion is considered to be crucial: The theory postulates that control loss is associated with anxiety. Compensatory control mechanisms are thought to specifically operate to alleviate anxieties that stem from the experience of low personal

control (Kay et al., 2008, 2009). Therefore, one must also consider the role of anxiety for these mechanisms. One implication of this claim is that low personal control fosters feelings of anxiety; the other implication is that people try to cope with this anxiety by compensatory control.

First, experiencing low personal control can increase feelings of anxiety. In a series of studies, threatened personal control led to more anxiety about the future (Goode et al., 2014); but the authors operationalized anxiety as *beliefs about future economic success*, such that one might argue that they did not exactly measure anxiety, but rather a quite specific belief. However, capturing anxiety in a more general manner yielded similar results: In three studies manipulating feelings of control, subjects who experienced little control rated threatening stimuli as more fear- and anxiety-provoking than subjects who experienced more control (Kaufmann & Neumann, 2019). Furthermore, a relation between lower control beliefs and increased state anxiety has been found (Lachman & Agrigoroaei, 2012).

Second, anxiety—combined with threat—interacts with personal control on the use of control restoration mechanisms. For example, perceived control can bolster the effects of threat on prejudice. In three studies, feeling threatened increased prejudice, but only when people at the same time experienced low control over the threat or their lives in general (Greenaway et al., 2014). In another series of experiments, people who were induced to feel uncertainty relied more on control restoration mechanisms such as defense of government and belief in conspiracies and the paranormal (Whitson et al., 2015). Results revealed that the effect depended on the uncertainty but not valence of the situation: It was not specific for anxiety, as it also occurred when participants recalled experiencing uncertainty in a positive way, such as in hopeful situations. Although the feeling of uncertainty is closely related to, but not the same as the experience of low personal control, similar effects have been reported for personal control: When people were exposed to imaginative threat scenarios that elicited anxiety, their reported anxiety predicted increased beliefs in the existence of a controlling god. This effect only occurred in those participants who were told to rely on external control and imagined having low personal control (Laurin et al., 2008).

Taken together, these studies demonstrate that effects of threat on relying on external control are affected by the experience of low personal control. Whereas Greenaway et al. (2014) and Whitson et al. (2015) showed effects of threat or uncertainty—and not specifically anxiety—on the use of compensatory control, the research of Laurin et al. (2008) directly supports the notion that anxiety fosters compensatory control: In their studies, low personal control together with experiencing threat and anxiety increased peoples' reliance on vicarious control by a controlling god. Still, anxiety was not provoked by a general feeling of low personal control but by a concrete imaginary threat. The link to personal control here consisted in the solution to the threat being internal or external, but not high or low, respectively.

All research cited above used anxiety or threat as a predictor for compensatory control, and personal control as a moderator. Following Kay and Eibach (2013), it is conceivable as well that anxiety mediates the effects of personal control on compensatory control. While other mediators of compensatory control have been tested, for example, need for structure (Ma et al., 2019), the possible mediating role of anxiety in compensatory control processes has not yet been examined.

The Current Research

Having outlined theories and central findings on personal control and anxiety, the current research aims at contributing empirical evidence to some open questions. First, while stereotyping has been examined as a compensatory control mechanism, prejudice has not. Given their similar functions it seems conceivable that they both serve to compensate for low personal control. Therefore, I will examine the effects of personal control on both stereotypes and prejudice. Drawing on the theoretical background of CCT (Kay et al., 2008, 2009), the integrative two-process model of control restoration (Stollberg et al., 2017), and their related research, I expect that low personal control leads to greater stereotyping and prejudice. Second, because compensatory control has only been shown with measures of explicit stereotyping, I will test for effects on implicit measures of stereotyping and prejudice as well. Third, the theories do not only consider effects of situational personal control, but also effects of chronically lower levels of personal control. There are even studies that failed to replicate effects of autobiographical manipulations of personal control on compensatory control: van Elk and Lodder (2018), for example, successfully manipulated participants' personal control using different control manipulation tasks. However, lower personal control did not affect most of their measures of illusory pattern perception. More consistent effects have been found when individual difference measures of personal control were used (Hoogeveen et al., 2018). Therefore, the current research includes trait measures of personal control and anxiety.

Furthermore, as Kay and Eibach (2013) suggest, anxiety is tested as a mediator of the relationship between personal control and compensatory control. While links between low personal control and anxiety on one hand, and anxiety and compensatory control on the other hand have been established, I am not aware of research combining these links in a mediation analysis. Also, none of these relations have yet been tested for stereotyping and prejudice. I assume that anxiety mediates the relationship between low personal control and stereotypes and prejudice, such that low personal control is associated with stronger feelings of anxiety, and more anxiety is associated with stronger stereotyping and prejudice.

As identification plays a role for both stereotyping and personal control, it will be included in the current research. It has been shown to impact ingroup as well as outgroup stereotyping: Strong identification with one's ingroup can increase prejudice towards a (threatening) outgroup, and low identification can increase anxiety towards

the outgroup (Bizman & Yinon, 2001). Higher identification with an ingroup can increase self-stereotyping (van Rijswijk et al., 2006). For personal control, identification might be seen as a predictor or a consequence: Low and temporarily reduced control can increase identification with social groups (Fritsche et al., 2013), and higher identification with groups helps bolster feelings of personal control (Greenaway et al., 2015; Jetten et al., 2017). Identification with the respective groups thus will be examined in exploratory analyses to investigate its role for control restoration in the context of stereotyping and prejudice.

To test my assumptions, I conducted two experiments. Personal control and anxiety were measured both situationally and trait-wise, and stereotyping (Experiment 1) and prejudice (Experiment 2) were assessed.

Experiment 1

The first experiment was designed to examine the influence of personal control and anxiety on gender stereotypes. Participants' feelings of personal control were manipulated, and their impact, together with feelings of anxiety, on implicit and explicit gender stereotyping was tested.

Method

Participants

Planned sample size to detect a small to medium effect (d = .30) of low vs. high personal control on stereotyping in a t-test was N = 484 (calculated with G*Power; Faul et al., 2009). Data of N = 184 participants were collected in the lab. Due to the COVID-19 pandemic, the laboratories were shut down during data collection and the procedure was adapted to the situation. Data of N = 315 additional participants were collected online, resulting in a total N = 499 to compensate for possible exclusions. Participants were recruited via the management system for psychological studies at Trier University and via university mailing lists. They received either partial course credit or 5€ for compensation. Thirty-one participants were excluded from analyses because of spending more than 60 minutes completing the online procedure or because they either did not write anything in the control manipulation task or had not completed it according to the instruction. Two participants were excluded because they initially stated to be at least 18 years old, but later indicated to be underaged. The final sample thus consisted of N = 465 participants (38.5% lab, 61.5% online), who were 18 to 52 years old (M = 23.19, SD = 4.19). Approximately three-quarters of participants classified themselves as female (75.5%), one-quarter male (24.3%), and 0.2% indicated their gender as "other." Most participants were university students (95.3%).

Materials

Personal control was manipulated via an autobiographical experience task in which participants recalled a story about either a situation in which they had felt in control or a situation in which they had experienced loss of control (following Whitson & Galinsky, 2008). They were asked to describe the situation and to report their related thoughts and feelings as detailed as possible. The effectiveness of this manipulation was tested by a single-item measure on subjective control, asking participants to indicate how much they felt in control on a five-point scale ranging from 1 (*not at all*) to 5 (*strongly*), as well as a measure of state anxiety with three items asking participants how fearful, anxious, and nervous they felt on a five-point scale from 1 (*not at all*) to 5 (*extremely*), $\alpha = .99$.

Implicit gender stereotypes were assessed in an implicit association test (IAT; Greenwald et al., 1998), using male and female names as well as attributes representing warmth and competence from the gender stereotype IAT (Rudman & Glick, 2001). Participants categorized name stimuli according to gender and attribute stimuli according to category by pressing the key "*e*" or "*i*" on the keyboard, with each key representing one specification of each stimulus type (male or female, warm or competent). Reaction times and accuracy were used to calculate a score of the strength of implicit stereotypes, taking into account congruent (i.e., male–competence and female–warmth pairings) vs. incongruent (i.e., male–warmth and female–competence pairings) reactions (for the exact procedure and scoring, see Greenwald et al., 2003).

Explicit gender stereotypes were measured with the Gender Stereotype Index (Rudman & Goodwin, 2004). Using this index, participants rated the words representing warmth and competence from the IAT on how strongly they associated them with men and women, respectively. The subscales showed good internal consistency ($\alpha = .80$ for masculinity–competence, $\alpha = .86$ for female–warmth).

Trait anxiety was assessed with the German version of the State-Trait Anxiety Inventory (STAI-G; Laux et al., 1981; $\alpha = .92$). Trait personal control was assessed with a questionnaire on beliefs about personal control and competence (FKK; Krampen, 1991; $\alpha = .62$). Identification with men and women was assessed with single items asking participants to indicate how strongly they identified with men and women, respectively, on a six-point scale ranging from 1 (*not at all*) to 6 (*very strongly*).

Procedure

Participants were first presented with the study information and gave informed consent. In the laboratory procedure, they signed print versions of the consent forms. In the online procedure, the forms were presented on screen and participants had to agree by ticking a checkbox before they could start the experiment.

The experimental procedure started and participants were told to complete two tasks. The manipulation of personal control was presented as a short pre-test of material for another study, unrelated to the rest of the experiment, to prevent them from asso-

ciating their feelings of personal control with the subsequently presented stereotype measures. Within five minutes, they first completed the autobiographical experience task, followed by the manipulation check. Assignment to the high control versus low control condition was counterbalanced between subjects. Next, they started the second part of the experiment by first completing the gender stereotype IAT. Key assignment was counterbalanced between participants as well as the order of compatible and incompatible blocks. Finally, they completed the questionnaires on gender stereotypes, trait anxiety, and trait control as well as the identification items. After the procedure was concluded, participants were debriefed about the purpose of the study and thanked for their participation.

In the lab, the manipulation of personal control and the manipulation check were carried out in a pen-and-paper format. The implicit and explicit measures of gender stereotypes as well as the assessment of trait anxiety and trait control were computed in E-Prime 2.0 (Psychology Software Tools, Inc., 2015). When the laboratories were closed due to the pandemic, the procedure was modified: All measures were programmed with Qualtrics (2019) to allow the experiment to be carried out online. Participants were presented the study information, informed consent, and all measures in a single online session. They read the same cover story and the order of the tasks stayed the same. The procedure only differed in the order of collection of demographic data, such as age and gender, which was presented at the start of the computer-based part of the experiment in the laboratory, but at the end of the online procedure.

Results

The following analyses were carried out using *z*-scored variables for control, anxiety, and stereotyping measures.

Manipulation Check

Participants in the low control condition reported lower feelings of control (M = 3.55, z = -.05, SD = 1.02) than those in the high control condition (M = 3.65, z = .05, SD = .96), but the difference did not reach significance, $t(461) = -1.07$, p = .286, 95% CI [-.280, .083]. Participants reported higher anxiety in the low control condition (M = 2.25, z = .21, SD = 1.06) compared to the high control condition (M = 1.86, z = -.22, SD = .89). Because of a significant Levene's test (F = 9.87, p = .002), results for unequal variances are reported, $t(457) = 4.73$, $p < .001$, 95% CI [.250, .606].

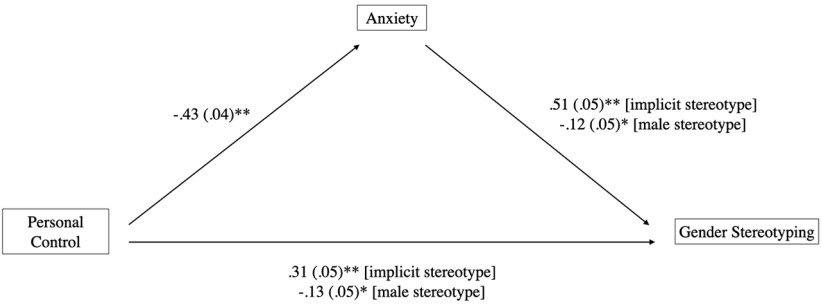
Impact of Personal Control and Anxiety on Stereotyping

Because the manipulation did not significantly affect state control, the following analyses are based on the trait measures of control and anxiety. To test whether anxiety mediated the relationship between personal control and stereotyping, I conducted mediation analyses using PROCESS model 4 (Hayes, 2018), with 10,000 bootstrap samples for percentile

bootstrap confidence intervals. Significant direct effects for the analysis are displayed in Figure 1.

Figure 1

Direct Effects of Personal Control, Anxiety, and Gender Stereotyping



Note. N = 465, custom seed 1234, bootstrap samples = 10,000.
$^{*}p < .05$. $^{**}p < .01$.

Contrary to my assumptions, low personal control was associated with less implicit gender stereotyping, β = .31, t = 6.72, p < .001, 95% CI [.216, .395]. As Figure 1 shows, low personal control was associated with more anxiety, β = -.43, t = -10.22, p < .001, 95% CI [-.509, -.344]. Anxiety mediated the relationship between personal control and implicit gender stereotyping, standardized indirect effect β = .22, 95% CI [-.305, -.144]. However, the total effect of control and anxiety on implicit stereotypes was nonsignificant, β = .09, t = 1.88, p = .061, 95% CI [-.004, .179].

Low personal control was associated with a stronger explicit male stereotype, β = -.13, t = -2.46, p = .014, 95% CI [-.226, -.025]. This relation was mediated by anxiety, standardized indirect effect β = .05, 95% CI [.006, .104]. The total effect of control and anxiety on the explicit male stereotype was nonsignificant, β = -.08, t = -1.64, p = .101, 95% CI [-.167, .015].

Low personal control was not associated with the explicitly measured female stereotype, β = -.06, t = -1.10, p = .272, 95% CI [-.157, .044]. Accordingly, no standardized indirect effect emerged, β = .02, 95% CI [-.024, .065]. Also, there was no total effect of control and anxiety on the explicit female stereotype, β = -.04, t = -.84, p = .401, 95% CI [-.130, .052]. The same analyses based on manipulated control and anxiety did not yield any significant results, for details please refer to the Supplementary Materials.

Exploratory Analyses

Additionally to hypothesis testing, I examined the effects of participants' identification with a specific gender in the context of subjective control, anxiety, and stereotyping

with PROCESS model 15 (Hayes, 2018). This model tests the moderating effect of identification on the relationship between control and stereotyping through anxiety. Specifically, it tests whether gender identification moderates the relationship between anxiety and gender stereotyping as well as the relationship between control and stereotyping. Identification with a gender is important for perceiving the to-be-stereotyped groups of women and men as ingroups or outgroups, and therefore, gender identification might play a role for gender stereotyping. In the current experiment, the categorization as ingroup or outgroup might impact the direct effect of loss of control on stereotyping—as, for example, participants might rather stereotype a group perceived as outgroup, but not their ingroup; or identification might interact with loss of control in terms of eliciting ingroup favoritism.

The analyses were carried out within the respective ingroups, such that for women, identification with women was entered, and for men identification with men. All variables were *z*-scored for the following analyses.

Results revealed that the association of control and implicit gender stereotyping was significant for men with low (β = .48, t = 2.67, p = .009, 95% CI [.124, .839]) and medium identification (β = .29, t = 3.51, p = .001, 95% CI [.128, .460]), but not for those highly identified with men, β = .19, t = 1.27, p = .208, 95% CI [-.106, .480]. For women, this relation was significant on all levels of gender identification, that is, low, β = .45, t = 5.29, p < .001, 95% CI [.284, .621]; medium, β = .35, t = 6.28, p < .001, 95% CI [.242, .463]; and high, β = .25, t = 3.91, p < .001, 95% CI [.125, .379]. Conditional indirect effects of control on implicit gender stereotyping through anxiety were significant on all three levels of identification for both men and women, and they pointed in the opposite direction than the direct effect, see Table 1.

Table 1

Conditional Direct and Indirect Effects for Mediation, Moderated by Gender Identification

		Direct Effect			Indirect Effect		
Variable		**β**	***LL***	***UL***	**β**	***LL***	***UL***
Implicit Gender Stereotype							
Men	Low Gender Identification	.48	.124	.839	-.21	-.487	-.061
	Medium Gender Identification	.29	.128	.460	-.15	-.359	-.039
	High Gender Identification	.19	-.106	.480	-.11	-.363	-.003
Women	Low Gender Identification	.45	.284	.622	-.27	-.405	-.175
	Medium Gender Identification	.35	.242	.463	-.24	-.351	-.147
	High Gender Identification	.25	.125	.380	-.20	-.329	-.106

		Direct Effect			Indirect Effect		
Variable		**β**	***LL***	***UL***	**β**	***LL***	***UL***
Explicit Male Stereotype							
Men	Low Gender Identification	.06	-.358	.482	.02	-.131	.202
	Medium Gender Identification	-.07	-.265	.125	.00	-.081	.154
	High Gender Identification	-.15	-.490	.199	-.01	-.152	.217
Women	Low Gender Identification	-.36	-.549	-.175	.11	.019	.234
	Medium Gender Identification	-.23	-.357	-.111	.08	.024	.159
	High Gender Identification	-.11	-.247	.036	.05	-.014	.138
Explicit Female Stereotype							
Men	Low Gender Identification	.19	-.169	.546	.02	-.142	.162
	Medium Gender Identification	.02	-.145	.187	-.02	-.138	.061
	High Gender Identification	-.07	-.367	.220	-.04	-.229	.086
Women	Low Gender Identification	.07	-.130	.269	-.05	-.165	.042
	Medium Gender Identification	-.05	-.179	.083	.00	-.053	.066
	High Gender Identification	-.17	-.316	-.015	.06	-.010	.157

Note. N = 113 men, N = 351 women. *LL* = Lower Level, *UL* = Upper Level.

Effects of control on the explicit male stereotype were found neither in women who highly identified with their gender nor in men. They were only significant in women with low (β = -.36, t = -3.81, p < .001, 95% CI [-.549, -.175]) and medium gender identification, β = -.23, t = -3.75, p < .001, 95% CI [-.357, -.111]. For these women, control loss was related to stronger male stereotypes, and the effect of control on the male stereotype through anxiety showed a positive relation, see Table 1.

Although mediation analysis with PROCESS Model 4 showed no effects of control on the explicit female stereotype overall, the exploratory analysis revealed that this was only the case for men (regardless of gender identification) and for women with low or medium gender identification. In women who were highly identified with their gender, control loss was related to stronger explicit female stereotypes, β = -.17, t = -2.16, p = .031, 95% CI [-.316, -.015].

Discussion

This experiment tested the assumption that low personal control is related to more stereotyping. The results provide support with regard to explicit stereotyping: Lower personal control predicted a stronger male stereotype. In female participants who strongly identified with women, low personal control was also associated with a stronger female stereotype whereas in those women who did not identify strongly with their own gender, low personal control was associated with stronger male stereotypes. This result

aligns with existing research that found ingroup stereotyping to be increased for highly identified persons (van Rijswijk et al., 2006). Contrary to my assumption, low personal control was associated with less implicit gender stereotyping.

Furthermore, anxiety mediated the relationship between personal control and stereotyping. Low personal control predicted higher anxiety, but the effects of anxiety on stereotyping were mixed: It led to more implicit gender stereotypes but lower explicit male stereotypes in all participants and to lower female stereotypes in participants highly identified with women. Overall, the mediation analysis showed indirect effects of personal control on explicit gender stereotypes, such that lower personal control was associated with stronger stereotyping.

In sum, although the role of anxiety needs to be further clarified, the results of Experiment 1 reflect the function of explicit stereotyping as a compensatory control mechanism. They also suggest that identification might play a role as a boundary condition for ingroup stereotypes (for further analyses and a short discussion on identification please refer to the Supplementary Materials).

Experiment 2

The second experiment was designed to examine the influence of personal control and anxiety on prejudice. It assessed compensatory control in the context of racism and xenophobia, as they represent prevalent prejudice in German society and have been found to correlate with feelings of low personal control (Heitmeyer, 2018). Feelings of personal control were manipulated and their influence on implicit and explicit racial prejudice was tested.

Method

Participants

Planned sample size to detect an effect of $d = .30$ in a t-test was $N = 484$. Data of 101 participants were collected in the lab and additional 400 participants participated online, resulting in $N = 501$. Participants were recruited via the participation management system for psychological studies at Trier University and via university mailing lists. They received either partial course credit or 5€ as compensation for their participation.

19 subjects were excluded from the analyses due to spending more than 60 minutes in the online study. Further 26 subjects were excluded because they did not complete the control manipulation task or did not follow the instructions of the task, resulting in a total sample size of $N = 456$. Participants (21.7% lab, 78.3% online) were between 18 and 63 years old ($M = 23.03$, $SD = 4.52$); and 30% of them were male, 68.6% female, 0.7% indicated their gender as "other," and 0.7% did not indicate their gender. The majority of participants were university students (94.1%).

Materials and Procedure

Apparatus and stimuli were largely the same as in Experiment 1, with some exceptions: The IAT assessed implicit prejudice in the style of the racial bias IAT (Greenwald et al., 1998), using pictures from the Chicago Face Database (Ma et al., 2015) that were labeled as being "*German*" or "*Foreigner*." Explicit prejudice measures were two short scales assessing racism (α = .91) and xenophobia (α = .90; Heitmeyer, 2002), on each of which participants indicated how much they agreed to two statements regarding their attitudes towards foreigners and how they should be treated compared to Germans. Additionally, participants were asked to indicate how they perceived Germans and foreigners, respectively, on a scale ranging from 1 (*positive*) to 5 (*negative*). Trait variables were again captured with the STAI-G (Laux et al., 1981; α = .91) and the FKK (Krampen, 1991; α = .58). The manipulation check was carried out with the same items assessing feelings of control and anxiety as in Experiment 1, $\alpha_{anxiety}$ = .81. The procedure was similar to Experiment 1.

Results

The following analyses were carried out using *z*-scored variables for all dependent and independent variables.

Manipulation Check

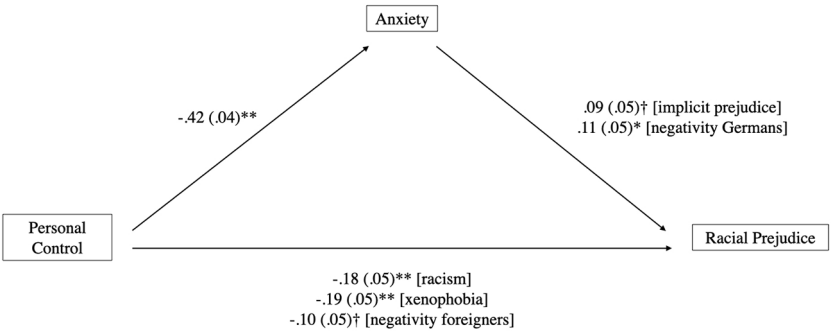
Personal control was slightly, but not significantly lower in the low control (M = 3.59, z = -.04, SD = .98) than in the high control condition, M = 3.68, z = .04, SD = .97; $t(453)$ = -.945, p = .345, 95% CI [-.273, .096]. Anxiety differed between the conditions, such that higher anxiety was reported in the low control condition (M = 2.25, z = .23, SD = .95) compared to the high control condition, M = 1.81, z = -.26, SD = .78. Because of a significant Levene's test (F = 12.12, p < .001), results for unequal variances are reported, $t(451)$ = 5.37, p < .001, 95% CI [.306, .660].

Impact of Personal Control and Anxiety on Prejudice

Because the manipulation had failed to significantly affect state personal control, the following analyses were again carried out using the trait measures of control and anxiety. To test whether anxiety mediated the relationship between personal control and prejudice, I conducted mediation analyses with PROCESS Model 4 (Hayes, 2018). Figure 2 shows that personal control predicted anxiety, β = -.42, t = -9.38, p < .001, 95% CI [-.504, -.330]. Personal control was not associated with implicit prejudice as there were no significant total, direct, or indirect effects.

Figure 2

Direct Effects of Personal Control, Anxiety, and Racial Prejudice



Note. N = 454, custom seed 1234, bootstrap samples = 10,000.
$^{\dagger}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

Low personal control was associated with higher scores of racism, β = -.18, t = -3.34, p = .001, 95% CI [-.278, -.072]. This relation was not mediated by anxiety, standardized indirect effect β = .01, 95% CI [-.031, .072]. There was a total negative effect of control on racism, β = -.17, t = -3.45, p < .001, 95% CI [-.260, -.071].

Low personal control was also associated with higher xenophobia scores, β = -.19, t = -3.62, p < .001, 95% CI [-.291, -.086]. This relation was not mediated by anxiety, standardized indirect effect β = -.01, 95% CI [-.048, .034]. The total effect of personal control on xenophobia was β = -.20, t = -4.12, p < .001, 95% CI [-.290, -.103].

Personal control did not predict negativity towards Germans (β = -.04, t = -.79, p = .429, 95% CI [-.145, .062]), but higher anxiety was associated with more negativity towards Germans, β = .11, t = 2.19, p = .029, 95% CI [.011, .212]. The relation of personal control and negativity towards Germans was not mediated by anxiety, standardized indirect effect β = -.05, 95% CI [-.093, .002]. There was a nonsignificant trend for a total effect of personal control and anxiety predicting reduced negativity towards Germans, β = -.09, t = -1.82, p = .069, 95% CI [-.184, .007].

The analysis also revealed a nonsignificant trend of personal control to predict negativity towards foreigners, β = -.10, t = -1.93, p = .054, 95% CI [-.206, .002]. Anxiety did not mediate the relation between personal control and negativity towards foreigners (standardized indirect effect β = .01, 95% CI [-.038, .050]), but together they had a total effect, such that low personal control and anxiety were associated with more negativity towards foreigners, β = -.10, t = 2.00, p = .046, 95% CI [-.192, -.002]. For results of the same analyses based on manipulated control and anxiety please see the Supplementary Materials to this article.

Exploratory Analyses

I performed the same moderated mediation analyses as for Experiment 1 (PROCESS Model 15; Hayes, 2018) with identification as Germans (M = 3.73, SD = 1.12) and foreigners (M = 2.90, SD = 1.14). Participants' identification affected the relationship between personal control, anxiety, and prejudice in only one case: For participants who indicated low identification with Germans, the analysis yielded a small significant indirect effect of personal control through anxiety on implicit racial prejudice (β = -.05, 95% CI [-.119, -.006]), such that low personal control was associated to greater implicit racial prejudice. Direct effects of personal control on racism and xenophobia were significant for all subjects, and they were not moderated by identification with Germans or foreigners. For more details on the results, please refer to Table 6 in the Supplementary Materials.

Discussion

As the manipulation of personal control had failed, analyses for Experiment 2 are again based on the trait measures of personal control and anxiety. Low personal control was associated with more explicit racism and xenophobia, but not with implicit prejudice or negative evaluations. However, all results point in the same direction: People experiencing low personal control rated both Germans and foreigners more negatively than people experiencing higher personal control. Although low personal control was associated with more anxiety, anxiety did not mediate the relationship of personal control and prejudice. Also, identification with Germans or foreigners had no impact on the relationships of personal control, anxiety, and racial prejudice. The experiment thus provides mixed support for the hypotheses: Prejudice seems to function as compensatory control as it is related to low personal control, but this relation is not mediated by anxiety.

A first possible explanation for the unexpected result of anxiety not mediating the control–prejudice relation lies in the operationalization and measurement of anxiety in previous studies. In these works, the conclusion that anxiety and prejudice are related was based on manipulations of threat (Greenaway et al., 2014) or uncertainty (Whitson et al., 2015), but they did not include direct measures of anxiety. It seems possible that the manipulations in these studies did not actually affect feelings of anxiety, and thus the effects cannot be attributed to anxiety but only to the manipulated variables. Still, the finding that anxiety did not predict prejudice is contradictory to substantial results from previous research that found the constructs to be related. However, most of that research shows that intergroup anxiety—and not anxiety in general—mediates effects of other variables on prejudice, such as national identity (Servidio, 2020) or intergroup contact (Pettigrew & Tropp, 2008). In contrast, the current research assessed general anxiety, regardless of a specific threat or situation that might relate to the prejudice in question. It seems conceivable that either the anxiety-evoking situation or the type of anxiety has to be linked more closely to the prejudice to predict it. Evidence pointing in this direction is provided by two experiments that found economic threat to elicit anxiety,

which in turn mediated the influence of the economic threat on prejudice against Asian Americans (Butz & Yogeeswaran, 2011). In these experiments, the effects only occurred for prejudice against Asian Americans, whose stereotype in the U.S. involves being seen as economic competitors, but not for prejudice against Black Americans, whose stereotype does not imply competition over economic resources. Thus, anxiety might not lead to prejudice if there is no link between a threat of control or the kind of anxiety and the to-be-prejudiced group. Rather, it is conceivable that anxiety has to be linked in some way to the group of individuals that a person is prejudiced against to lead to increased prejudice.

General Discussion

The current research was designed to gather insights on stereotyping and prejudice as compensatory control. In two experiments, I examined the impact of low personal control and anxiety on stereotyping and prejudice. Because the manipulation failed to affect participants' feelings of personal control, analyses for both experiments were carried out with interindividual difference measures of personal control and anxiety. Both experiments yielded results that provide mixed support for the hypotheses: As expected, lower personal control was associated with a stronger expression of explicit gender stereotypes (Experiment 1) as well as more explicitly reported racism and xenophobia (Experiment 2). The current research thus supports the assumption that low feelings of personal control can foster stereotyping and prejudice.

Experiment 1 replicates existing findings on compensatory control: Although a different measure was employed, the results on explicit gender stereotypes resemble those of Ma et al. (2019). Experiment 2 adds to this line of research by introducing prejudice as another means of compensatory control. Importantly, the current findings go beyond those reported in previous literature by (a) revealing differential effects of low personal control on explicit and implicit measures, (b) showing that anxiety plays a different role for stereotyping and prejudice as compensatory control, and (c) revealing an impact of identification on compensatory control.

Control Restoration Works Differently on Implicit and Explicit Levels

The results on explicit measures support the notion that stereotyping and prejudice compensate for low control, but for implicit measures the results differ: Lower personal control was associated with less implicit stereotyping, and it was not associated with implicit prejudice. The current research thus provides mixed evidence regarding control restoration on implicit and explicit measures.

However, these differences in findings on explicit and implicit reactions to control loss are questionable. As the experiments presented here represent the first tests on explicit and implicit coping with low control, more findings are needed to replicate the results. Also, other implicit measures than the IAT (Greenwald et al., 1998) should be considered to test for implicit effects. The IAT has been subject to several criticisms, such as its poor validity—for the race IAT, of which a variant was used in the current research, only 20% of the variance can clearly be attributed to reflecting racial preferences (Schimmack, 2021). Thus, more research is needed to determine whether effects of personal control really differ on implicit and explicit levels.

Anxiety Affects Stereotyping, but not Prejudice

While mediation analyses did not reveal any effects of anxiety on prejudice, anxiety mediated the relationship between personal control and stereotyping. Importantly, in both experiments the mean scores of personal control and anxiety were similar, so their different impact on stereotyping and prejudice should not hinge on general differences in feelings of personal control or anxiety. This raises the question which different role anxiety might play for stereotyping and prejudice, respectively.

The current research suggests that anxiety might be important in some, but not all compensatory control processes. It seems plausible that stereotyping and prejudice each have a different potential to alleviate anxieties. In Laurin et al. (2008), feelings of anxiousness predicted belief in a controlling god. Analogously to the complexity reducing function of stereotyping, this belief conveys security: Both the controlling god who acts on one's behalf and the either warm or competent gender stereotypes reduce insecurities and convey simplicity. Prejudice, with its negative connotation on the other hand, might not be security-inducing in this manner and thus not be serving to alleviate general anxiety.

The Role of Identification

In Experiment 1, low personal control was associated with a stronger expression of the female stereotype in those female participants who strongly identified with women, and a stronger expression of the male stereotype in those who identified less with their gender. The female stereotype in this case can be seen as self-stereotyping. While for those participants who identified strongly, this self-stereotyping could serve as compensatory control, those who indicated only medium to low identification with their gender rather relied on vicarious control provided by a stronger male stereotype that conveys the picture of a dominant, agentic out-group.

On the other hand, in Experiment 2 there were no effects of identification on compensatory control. This might be due to a lack of identification with both groups as well as lower variance for the measures. Another important difference is that the self-stereo-

typing in Experiment 1 occurred in a mainly positively valenced manner, because it meant stereotyping women as warm. Maybe low personal control could be compensated via self-stereotyping because it ascertained female participants regarding their own role. In Experiment 2, negative prejudice was assessed, such that self-prejudgment would not have served control restoration. Furthermore, in contrast to gender identification in Experiment 1, identification with Germans and foreigners were positively correlated, such that identification might interact differently in Experiment 1 and Experiment 2.

Taken together, the results suggest that identification might be an important boundary condition for control restoration attempts. The exact condition, to feel highly identified with the stereotyped group for stereotyping to increase, calls for further examination regarding the questions (a) whether the effect of identification of self-stereotyping as compensatory control is replicable and (b) whether it only occurs with positive stereotypes that can be used affirmatively.

Limitations, Implications, and Future Directions

The current research is limited by the nonsignificance of the manipulation of personal control, such that the results cannot be interpreted in a strictly causal manner. Further research should involve manipulating feelings of personal control and examining the relation between personal control, stereotyping, and prejudice in experimental designs. Therefore, another kind of manipulation could be employed. In the autobiographical experience task, participants mentally reenacted an event in which they had experienced low control and they probably found themselves in another state while completing the experiment. There are manipulations of personal control in which participants can have hope for control, but will be unable to actually achieve it, such as thought control tasks (Ma et al., 2017) or unsolvable tasks (Whitson & Galinsky, 2008, Experiment 1 and 2). In such tasks, it seems more likely that participants actually experience a feeling of control loss compared to an autobiographical experience task.

However, the current research contributes to research on control restoration by introducing prejudice as another possible means of compensatory control and differentiating between explicit and implicit levels. Furthermore, it sheds light on CCT's postulation that compensatory control mechanisms alleviate anxieties. It might be the case that compensating can alleviate anxieties, but the different results on anxiety regarding stereotyping and prejudice suggest that feelings of anxiety are not necessary to elicit compensatory control. Consistent with Laurin et al. (2008), the current research supports the notion that personal control is the critical variable for compensation to occur, with anxiety being a different, but not a necessary impact factor.

Besides these contributions, the current research leaves us with some questions that should be addressed in future research. While general anxiety has been shown to play a role for some control restoration phenomena, such as the belief in a controlling god (Laurin et al., 2008), the question of how anxiety relates to prejudice as compensa-

tory control remains open. A more concrete measure of intergroup anxiety might be employed to examine whether the connection between the trigger of anxiety and the prejudiced social group is crucial for anxiety to play a role in the process. Also, drawing on the integrative two-process model of control (Stollberg et al., 2017), future research could examine whether it is extended primary control (as in gender stereotyping) that alleviates anxieties, while secondary control (as in prejudice) does not fulfill this function.

Regarding the role of identification it would be interesting to test whether the effects found in the current research only occur for positive self-stereotyping or whether people also might rely on self-stereotyping even if this would convey a negative self-image. Although it seems less conceivable that one would rely on a negative stereotypic self-image to cope with loss of control, this possibility cannot be ruled out yet.

Also, the relationship between other personality traits or attitudes and compensatory control should be examined. Liberalism versus conservatism, for example, has already been shown to affect feelings of personal control in the same situation (Shepherd & Kay, 2018). In the current research, trait variables of personal control and anxiety, as well as identification, affected stereotyping and prejudice. Further constructs might be considered to interact with perceived loss of control and contribute to the understanding of compensatory control, for example, social dominance orientation (Pratto et al., 1994) or right-wing authoritarianism (Altemeyer, 1988). Both are related to prejudice (e.g., Duckitt & Sibley, 2007), and as they imply need for order and structure that can be threatened by low personal control, it seems conceivable that personal control plays a role in these relationships. In a similar vein, it would be interesting to examine whether people do have preferences for specific control restoration mechanisms and how such preferences affect the process of dealing with low personal control.

Conclusion

The current research shows that stereotyping and prejudice serve to compensate for low personal control. Although stereotypes and prejudice are content specific, they do not need a content-specific trigger but can be reinforced by a diffuse feeling of not being in control. In turn, bolstering a sense of personal control might help to reduce them. However, as stereotyping and prejudice are rooted in individual and social processes, they cannot be solely explained as mechanisms for coping with low personal control. Taking this into account, the current research provides evidence that examining stereotyping and prejudice adds to our understanding of reactions to low personal control.

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Data Availability: For this article, data is freely available (for access see Index of Supplementary Materials below).

Supplementary Materials

For this article, the following Supplementary Materials are available (for access see Index of Supplementary Materials below):

- Data for Experiment 1
- Data for Experiment 1, only male participants
- Data for Experiment 1, only female participants
- Data for Experiment 2
- Codebook for Experiment 1
- Codebook for Experiment 2
- Supplementary File containing analyses with regard to experimental conditions for Experiment 1 and 2

Index of Supplementary Materials

Schneider, L. J. (2022). *Supplementary materials to "Stereotyping, prejudice, and the role of anxiety for compensatory control"* [Data, Codebook]. PsychOpen GOLD. https://doi.org/10.23668/psycharchives.7754

Schneider, L. J. (2022). *Supplementary materials to "Stereotyping, prejudice, and the role of anxiety for compensatory control"* [Additional Materials]. PsychOpen GOLD. https://doi.org/10.23668/psycharchives.7753

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