Essentialism Goes Social:
Belief in Social Determinism as a Component of Psychological Essentialism

Ulrike Rangel
Catholic University of Louvain

Johannes Keller
University of Ulm

Individuals tend to explain the characteristics of others with reference to an underlying essence, a tendency that has been termed psychological essentialism. Drawing on current conceptualizations of essentialism as a fundamental mode of social thinking, and on prior studies investigating belief in genetic determinism (BGD) as a component of essentialism, we argue that BGD cannot constitute the sole basis of individuals’ essentialist reasoning. Accordingly, we propose belief in social determinism (BSD) as a complementary component of essentialism, which relies on the belief that a person’s essential character is shaped by social factors (e.g., upbringing, social background). We developed a scale to measure this social component of essentialism. Results of five correlational studies indicate that (a) BGD and BSD are largely independent, (b) BGD and BSD are related to important correlates of essentialist thinking (e.g., dispositionism, perceived group homogeneity), (c) BGD and BSD are associated with indicators of fundamental epistemic and ideological motives, and (d) the endorsement of each lay theory is associated with vital social-cognitive consequences (particularly stereotyping and prejudice). Two experimental studies examined the idea that the relationship between BSD and prejudice is bidirectional in nature. Study 6 reveals that rendering social-deterministic explanations salient results in increased levels of ingroup favoritism in individuals who chronically endorse BSD. Results of Study 7 show that priming of prejudice enhances endorsement of social-deterministic explanations particularly in persons habitually endorsing prejudiced attitudes.

Keywords: belief in social determinism, essentialism, lay theories, prejudice, stereotyping

One of the most important tasks individuals are confronted with in everyday social life is making sense of other people, such as coming up with reasons for why people act the way they do or why others are who they are. Finding explanations for observed behaviors or inferred traits of one’s counterpart is highly important for interpreting motives and reacting accordingly. Social cognition research of the last 4 decades has shown that when explaining observed behaviors of others, individuals tend to endorse a dispositional perspective; that is, they typically focus on factors rooted deeply inside the person and tend to neglect external factors (e.g., Ross, Amabile, & Steinmetz, 1977). This general tendency to refer to inside stories (cf. Markus, 2004; Plaut & Markus, 2005) holds true not only for the explanation of observed behaviors. Individuals also tend to refer to underlying natures or essences when explaining the personal characteristics of others, a propensity that has been termed psychological essentialism (Medin, 1989; Medin & Ortony, 1989). Recent research has discussed important consequences of essentialist lay theorizing, such as stereotyping and prejudice (Bastian & Haslam, 2006; Haslam, Rothschild, & Ernst, 2002; Keller, 2005; Keller & Bless, 2004; Yzerbyt, Corneille, & Estrada, 2001; Yzerbyt, Estrada, Corneille, Seron, & Demoulin, 2004; Yzerbyt & Rocher, 2002; Yzerbyt, Rocher, & Schadron, 1997), and has argued that essentialism plays an integral role in system justification (Haslam et al., 2002; Keller, 2005; Keller & Bless, 2004; Yzerbyt et al., 1997). Although psychological essentialism has been recognized as an important concept in social information processing, it is still rather unclear what exactly individuals refer to when they explain the characteristics of others with reference to an underlying essence, in particular, which types of lay explanations individuals use to explain the origin of other persons’ characteristics.

We argue that belief in social determinism (BSD) is an important lay theory individuals apply to explain the origin of other persons’ characteristics. BSD can be defined as a lay theory that implies that a person’s essential features (reflected in his or her fundamental “social character”) are shaped permanently and profoundly by social factors (e.g., upbringing, socialization, social background). We present a newly developed scale to measure this lay belief. In five correlational studies, we validate the construct BSD and show that this lay belief indeed constitutes a central dimension of psychological essentialism. Furthermore, we present data indicating that endorsement of BSD is associated with important sociocognitive concepts typically proposed as correlates of
essentialist thinking, such as dispositionism, perceived group homogeneity, and fundamental epistemic and ideological needs, as well as with significant consequences (stereotyping, prejudice, and discriminatory tendencies). Finally, we present results of two experimental studies documenting the bidirectional causal relation between endorsement of social-deterministic beliefs and prejudice. In combination, the present contribution speaks to the fact that BSD is an important component of essentialist lay theoretical thinking that has been almost completely neglected in prior research and theorizing on psychological essentialism.

Psychological Essentialism

The notion of psychological essentialism has been coined by Medin (1989; Medin & Ortony, 1989) in his theorizing on the relationship between similarity-based and explanation-based categorization processes (Medin & Shoben, 1988; Medin & Wattenmaker, 1987; Murphy & Medin, 1985; Wattenmaker, Nakamura, & Medin, 1988). Medin (1989) proposed that people use their theories about the world to structure their mental representations and to determine the category membership of given instances, and he maintained that when categorizing, individuals use the working hypothesis that things that look similar share deeper, essential qualities. Individuals thus act as if categorized instances—things and creatures—have essences or underlying natures that make them what they are.1 Medin (1989; Medin & Ortony, 1989) suggested that this “essentialist heuristic” (Medin, 1989, p. 1477), which conceives the characteristics of things and creatures as expressions of an underlying nature, is an elementary part of our perceptual and conceptual system because in most cases it constitutes an effective way of thinking about the social world. The notion that essentialism is a vital characteristic of human cognition has been further substantiated by the work of Gelman (1988, 2003; Gelman & Wellman, 1991) and Hirschfeld (1996, 2001), who showed that even young children have a firm understanding of essences and of the distinction between “insides” and “outsides” of persons and objects. According to Gelman and Wellman (1991), these results may indicate a “basic cognitive predisposition” (p. 243) toward psychological essentialism.

Recently, Yzerbyt and his colleagues (Yzerbyt & Rocher, 2002; Yzerbyt et al. 1997) integrated Medin’s reasoning into the social-psychological literature on stereotyping and prejudice.2 Yzerbyt et al. (1997) criticized the traditional view of stereotypes as purely cognitive devices that are used to simplify social information processing, and they pointed to the functional role of stereotypes in explaining and rationalizing the existing social situation. Stereotypes are thus more than just lists of attributes associated with a certain social category; most importantly, they include an underlying explanation that links the attributes together and accounts for the association between a given category label and stereotypic attributes (Yzerbyt, Rogier, & Fiske, 1998). According to this view, stereotypes allow an explanation for why members of a social category are the way they are by referring to an underlying nature or essence of group members. In addition, this essentialist explanation included in stereotypes serves a rationalization function by justifying the way group members are treated (Yzerbyt et al., 1997). With reference to an underlying nature of category members, individuals can justify social inequalities and unjust treatment. Essentialist explanations are thus assumed to play an integral role in stereotyping, serving both explanatory and rationalizing functions (Yzerbyt, Judd, & Corneille, 2004a; Yzerbyt et al., 1997, 1998).

Components of Essentialist Beliefs

In a first approach to the conceptualization of essentialism, several authors (cf. Rothbart & Park, 2004; Rothbart & Taylor, 1992; Yzerbyt et al., 1997) analyzed the core elements of an essentialist perception of social groups. According to Yzerbyt et al. (1997), perceiving social categories in essentialist ways is characterized by five central features. First, essentialized social categories are seen as having a specific ontological status; that is, all group members have a set of necessary features in common. Furthermore, group membership is perceived as immutable and exclusive, such that a member of an essentialized category cannot easily be thought of as a member of another social group. Individuals see the social group as having an underlying coherence or unity; thus, knowledge of group membership allows the perceiever to draw a host of inferences about the category members (inductive potential).

The structure of essentialist group perception has been explicitly analyzed by Haslam and colleagues (Haslam, Rothschild, & Ernst, 2000; Haslam et al., 2002). In their studies, the authors assessed nine aspects typically associated with an essentialist perception of categories and asked participants to rate a set of social groups with respect to these characteristics. Results indicated that the different aspects constituted two independent dimensions of essentialism: One dimension comprises the judged naturalness, necessity, immutability, discreteness, and stability of the category and is associated with the degree to which the category is perceived as natural kind (as opposed to human artifact categories; cf. Rothbart & Taylor, 1992). The second dimension includes rated uniformity, informativeness, inherence, and exclusivity, and represents reification or entitativity of the category, that is, the degree to which the category is seen as a real and meaningful entity. These findings suggest that essentialist perception of groups is not a unitary concept but is composed of two dimensions that can be described as the perception of social categories as natural kinds and meaningful entities.

Essentialist Lay Theories as Explanations for Individuals’ Characteristics

Taken together, these structural analyses contribute to the important clarification of central characteristics of social perception accompanied by the endorsement of essentialist lay theories. However, these conceptualizations of essentialism remain silent with respect to an important point. A key element of essentialist lay theories is their causal nature: They provide explanations for why persons are who they are (cf. Yzerbyt et al., 2004a). In our view,

---

1 Note that psychological essentialism does not refer to how the world really is but rather to how people approach and interpret the world. The claim is that people think categories have essences, not that this is an epistemologically sound position.

2 For similar theoretical perspectives, see also Chen (2001), as well as several chapters in the volume on group perception edited by Yzerbyt, Judd, and Corneille (2004b).
a conceptualization of essentialism thus should take into account the specific causal factors individuals refer to when they explain the origin of others’ characteristics and clarify the specific types of lay explanations individuals endorse in essentialist perception. More or less explicitly, several authors have suggested that genetic determinism constitutes the lay theory individuals predominantly refer to when endorsing essentialist explanations in social perception (e.g., Bastian & Haslam, 2006; Prentice & Miller, 2007; Rothbart & Taylor, 1992). For example, Bastian and Haslam (2006) assessed the belief in a biological basis of human attributes as an equivalent of perceived naturalness, which constitutes one factor of essentialist group perception. Indeed, recent research supports the view that essentialist perception of social groups can be based on belief in genetic determinism (BGD) and shows that lay belief in a biological basis of person characteristics is associated with proposed correlates and consequences of psychological essentialism (e.g., Bastian & Haslam, 2006; Hoffman & Hurst, 1990; Keller, 2005; Keller & Bless, 2004; Martin & Parker, 1995).

However, two important points question the plausibility of the assumption that reference to genes is the sole or predominant basis of essentialist theorizing. First, when explaining what determines the characteristics of others, individuals typically do not restrict their explanations to genetic causes; for example, they habitually attribute dispositions and observed behaviors to social (e.g., social background or upbringing) or metaphysical (e.g., God’s will) causes. This means that individuals can endorse different types of deterministic beliefs when explaining what makes others who they are (cf. Jayaratne et al., 2009). Supporting this notion, some authors (Gelman & Hirschfeld, 1999; Yzerbyt et al., 2004, 1997) have proposed that lay theories other than BGD can underlie the perception of social categories as “natural” and entitative. For instance, Yzerbyt et al. (1997) emphasized that subjective essentialism does not have to be based on biological features. According to these authors, a lay theory can be regarded as essentialist to the degree that it incorporates the conviction that certain factors—whether biological or not—shape the essential features of persons profoundly and lasting. The defining element of essentialist lay theories is thus their implication that features that are rooted deeply inside a person determine his or her personal characteristics. The opposite end pole of essentialism would therefore be a lay belief that a person’s behaviors and observable features are completely determined by factors outside the person, that is, by features of the immediate situation.

Second, we know from our own prior studies (Keller, 2005; Keller & Bless, 2004) that the acceptance of genetic-deterministic lay explanations varies widely across individuals and that many persons reject genetic determinism altogether. This, in turn, seems to contradict the notion that essentialism is a common mode of social thinking (Gelman, 1988, 2003; Gelman & Wellman, 1991; Medin & Ortony, 1989; Yzerbyt et al., 1998). If BGD was the only foundation of essentialist social perception, we would definitely expect that all individuals endorse BGD to a certain degree. However, this is not the case. For these reasons, we propose a second and complementary dimension of essentialism that is based on the belief that social factors determine the essence of a person. The defining characteristics of this social component of essentialism are described next.

Conceptualization of a Social Component of Essentialism

In the present article, we argue that essentialist thinking can be based on the belief that personal characteristics and behavioral tendencies are determined by social factors.

BSD as Essentialist Lay Theory

We define this social-deterministic lay belief as the conviction that a person’s fundamental features (reflecting his or her social character) are shaped lastingly by social factors such as social background or status, upbringing, peer contact, and socialization. This social character in turn is assumed to cause a person’s observable characteristics and behaviors. Thus, an integral part of BSD as defined here is that the socially determined personal characteristics are seen as deeply rooted inside the person—they constitute the socially formed essence of the person. As described above, this feature is a core element of an essentialist lay theory (Yzerbyt et al., 1997). Therefore, BSD is clearly distinct from a lay perspective that refers to factors of the immediate situation as influences on observed behaviors (which does not refer to an assumed essence). For example, No et al. (2008) assessed a lay belief in the social-constructive nature of race, which implies that race is an artificial category, socially constructed by a certain economic and societal context and thus easily malleable. Whereas this lay belief constitutes a way in which social conditions can influence persons’ behaviors, it denies any lasting impact of social factors on individuals’ fundamental features and essential character. This latter perspective thus reflects a belief in the “power of the situation” and can be thought of as the diametric opposite pole to essentialist lay theories. Importantly, BSD implies more than just the idea that the social environment influences individuals; rather, it entails the belief that social factors shape the very nature of a person, his or her social character.

Note that this conceptualization of BSD has a somewhat counterintuitive implication regarding the relationship of this lay belief to essentialist theorizing based on genetic determinism. If BSD actually constitutes a basis of essentialist thinking, then it should not necessarily represent the opposite of BGD. In contrast, we propose that individuals can endorse both lay theories at the same time. As an example, consider that most individuals seem to assume that parents influence the personality and abilities of their children to a great extent—and this both through their genetic heritage and through their parenting style, education, or social status. Thus, lay assumptions that both genetic factors and social factors have a lasting impact on a person’s character seem readily compatible and do not necessarily constitute conflicting beliefs.

Specific Characteristics of BSD

We conceptualize BSD as a complementary component of essentialist theorizing. Therefore, we propose that endorsement of this lay belief is associated with the concepts research has typically linked to essentialist lay beliefs. As a basis of essentialism, BSD should fulfill similar functions (e.g., ideological and epistemic functions) and involve the same consequences (e.g., stereotyping tendencies) as other proposed components of essentialist theorizing, such as BGD. However, at least two specific characteristics
differentiate BSD from the biological component of essentialism. First, when people refer to social factors as explanations for characteristics of others, they typically discriminate between diverse social causes such as socialization impact, parents’ upbringing, peer contact, and social status. This means that multiple and diverse social influences on a person’s character are well represented in individuals’ lay explanations. Furthermore, these causal factors can potentially interact, attenuating or amplifying one another’s influence, and thus imply a rather complex lay theoretical structure. In contrast, it seems unlikely that lay explanations based on genetic factors are similarly complex. Laypersons obviously do not discriminate between the influences of single chromosomes or consider interactions between different gene sequences. Thus, we suppose that BGD involves a less complex lay theoretical structure compared with BSD, which takes into account the multiple causation of personal characteristics.

Second, habitual endorsement of a strong BSD entails a tendency to explain phenomena of the social world with reference to social factors. Thus, social features of a person—such as social status, socialization background, and occupation—should be seen as particularly relevant information. As a consequence, individuals endorsing a strong BSD should be convinced that social differences between persons and groups are important and thus pay special attention to social factors such as differences in social hierarchy. In contrast, a strong endorsement of BGD should be associated with an attentional focus on biological features (e.g., sex or skin color), and thus persons believing in genetic determinism should stress biological differences between individuals and groups. Both of these differential characteristics are important for arriving at distinct predictions concerning the association of BSD and BGD with other sociocognitive concepts. However, as we assume that both lay beliefs constitute components of essentialism, above all else, they should be complementary in their relations to important correlates of essentialist thinking as well as proposed functions and consequences of essentialist lay theories.

**Important Correlates, Functions, and Consequences of Essentialist Lay Theories**

**Belief in Underlying, Stable Dispositions**

One core element of essentialist lay theories is the belief in an underlying nature, which determines a person’s essential characteristics. Therefore, essentialist theorizing necessarily implies a focus on an individual’s inner qualities as explanations for observed behaviors. Thus, individuals strongly endorsing essentialist beliefs should draw on factors within a person both to explain past and to predict future behaviors. Moreover, the belief in an underlying, identity-determining essence implies a high cross-situational and temporal stability of traits and behaviors. Both aspects can be conceived as central facets of lay dispositionalism (cf. Chiu, Hong, & Dweck, 1997; Poon & Koehler, 2006). The notion that essentialist beliefs go along with a strong tendency for lay dispositionist thinking is supported by results indicating that essentialist beliefs are associated with a preference for inherent explanations for stereotypic attributes (Bastian & Haslam, 2006). Moreover, the belief in the fixedness of traits (i.e., implicit entity theory; Dweck, 1999), which is closely related to lay dispositionist thinking (Chiu et al., 1997; Poon & Koehler, 2006), has also been conceived as a facet of essentialist beliefs (e.g., Bastian & Haslam, 2006, 2007; Rothbart & Taylor, 1992).

**Inductive Potential of Person Information**

As described above, an important feature of essentialist perception is that information related to a person’s essence is seen as highly relevant and informative. As a person’s essential features are assumed to cause surface attributes (Medin, 1989), knowledge of person information that is related to this essence (e.g., a person’s social class or skin color) allows individuals to draw rich inferences about other features of the person. However, we discussed above that endorsement of BSD as one component of essentialist beliefs and BGD as another is associated with a differential sensitivity to specific kinds of person information: BSD entails an attentional focus on social information (e.g., occupation or social status), whereas BGD involves high attentiveness to genetic or biological information (e.g., sex or skin color). Thus, it is likely that individuals endorsing a strong BSD perceive social person information, in particular, as holding high inductive potential. In contrast, individuals who believe in genetic determinism should think that genetic (and thus biological) person information, especially, reveals a lot about a person.

**Perceived Group Homogeneity**

The structural analyses of essentialist perception presented by Yzerbyt et al. (1997) and Haslam et al. (2000, 2002) imply that a high perceived homogeneity of social groups is a central correlate of essentialist beliefs. If individuals think that members of a given social group have a common essence or underlying nature, the group should be seen as a homogeneous entity. Yzerbyt et al. (2001) reported evidence documenting this link between essentialist thinking and perceived group homogeneity: The availability of an essentialist naive theory for categorizing persons into different groups led to a significant decrease of within-group variability. Thus, as components of essentialism, both BGD and BSD should be associated with a perception of social groups as homogeneous. However, social groups differ with regard to the specific features that group members have in common: Some groups are categorized on the basis of a social feature (e.g., occupational groups or social classes), others on the basis of a biological feature (e.g., skin color). As described above, social and biological features are of differential relevance for individuals strongly endorsing BSD or BGD. Therefore, we propose that BSD should be specifically related to the perception of groups categorized on the basis of social features as homogeneous entities, whereas BGD should be related to the perception of biological groups as particularly homogeneous entities.

**Functions**

Work from several authors suggests that endorsement of essentialist lay theories is linked to the fulfillment of fundamental sociocognitive motives. In their subjective essentialism approach to stereotyping, Yzerbyt et al. (1997) argued that essentialist explanations as part of stereotypes fulfill two main functions, an explanatory and a justification function. Essentialist theories explain why certain stereotypic attributes are descriptive of members...
of a certain category and at the same time justify the treatment of group members and rationalize social inequities. The idea that fundamental belief systems develop at least in part because they serve basic motives has also been put forward by Jost, Glaser, Kruglanski, and Sulloway (2003). In their discussion of the bases of conservatism, the authors argued that fundamental beliefs satisfy three kinds of sociocognitive needs: epistemic motives, which refer to a person’s need for definitive and simple answers; ideological motives, which are directed at justifying social inequalities and the status quo; and existential motives, which reflect individuals’ need to buffer threat to the self (e.g., by being reminded of one’s own death). We argue that essentialist lay explanations serve these needs particularly well because they provide final and unambiguous answers (cf. Hoffman & Hurst, 1990) and imply order, stability, and uniformity (Haslam et al., 2000, 2002). Furthermore, Keller (2005) proposed that essentialist beliefs can be conceptualized as hierarchy-enhancing myths in terms of social dominance theory (Sidanius, 1993). Essentialist lay theories offer justifications for social hierarchies and the status quo, because they attribute a group’s status in the social hierarchy to group-inherent essential features (e.g., genetically or socially defined differences in group abilities; Yzerbyt et al., 2001).

In keeping with the reasoning outlined by Jost et al. (2003), the relationship between essentialist lay beliefs and fundamental social-cognitive motives has been tested by Keller (2005), who showed that BGD is correlated with indicators of epistemic (e.g., need for closure; Webster & Kruglanski, 1994), ideological (e.g., social dominance orientation; Pratto, Sidanius, Stallworth, & Malle, 1994), and existential needs (e.g., fear of illness and death; Lucek & Morley, 1996). In the present context, it seems worthwhile to consider the possibility that BSD may be of particular relevance with respect to ideological motives that refer to existing social hierarchies. Given that BSD implies a special attentiveness to social differences, it seems plausible to assume that BSD is particularly closely related to ideological constructs that involve a special reference to social hierarchy and to differences in social status between individuals, groups, or nations (such as social dominance orientation, Protestant work ethic, and nationalism).

A specific function of lay beliefs has been discussed by Crandall and Eshleman (2003) in their suppression-justification model of prejudice. The authors argued that lay explanations can serve as justifiers for the expression of prejudice. Although genuine prejudice as an authentically negative reaction toward certain social groups is commonly suppressed due to social norms or personal value systems, the presence of justifying beliefs or attitudes allows the expression of these negative attitudes toward group members. Crandall and Eshleman suggested that individuals who endorse genuine prejudice are often highly motivated to find justifiers that permit unsanctioned expression of these prejudiced attitudes, because suppression is experienced as aversive and effortful. According to the authors, any kind of lay belief that explains why the expression of prejudice is acceptable or even desirable may be used as justification. As an example for justifying lay beliefs, Crandall and Eshleman cited status-preserving beliefs such as social Darwinism (Hawkins, 1997), the Protestant ethic (Katz & Hass, 1988), and social dominance orientation (Pratto et al., 1994), but also beliefs that highlight factors inside the person (e.g., personal attributions).

We propose that essentialist lay beliefs can serve as justifiers for the expression of prejudice, as they can be conceptualized as status-preserving beliefs (cf. Keller, 2005; Yzerbyt et al., 1998) and highlight person or group-inherent explanations for the societal situation or negative attributes associated with given social groups. Interestingly, this perspective implies that endorsement of essentialist explanations might be a reaction to the situational activation of prejudiced attitudes and the need to justify these prejudiced attitudes, and thus prejudice could be conceived as an antecedent of the endorsement of essentialist explanations. In contrast, current theorizing has commonly conceptualized prejudice as a consequence of an essentialist group perception, as described next.

Consequences

Already Allport (1954) speculated in his seminal discussion of the “prejudiced personality” that belief in group essences was an integral part of prejudiced attitudes. In a similar vein, Yzerbyt et al. (2004a) argued that an essentialist group perception represents an important antecedent of intergroup hostility and group conflicts. However, empirical findings regarding the relationship between essentialist beliefs and prejudiced attitudes are mixed. In particular, if prejudice against a certain social group is based predominantly on the perceived controllability of a specific stigmatized trait or behavior, such as mental illness or homosexuality, research has typically found no relations to essentialist beliefs (Haslam et al., 2002) or even reverse associations between an essentialist view of a certain social group and prejudice toward members of this group (Haslam & Levy, 2006; Hegarty & Golden, 2008; Jayaratne et al., 2006). For example, in a large interview study with White Americans, Jayaratne et al. (2006) found that BGD is associated with less prejudice toward homosexual persons. A possible explanation for these findings is that biological explanations for stigmatized traits or behaviors imply that individuals cannot be held responsible and thus cannot be morally condemned (cf. Haslam et al., 2002; Hegarty & Golden, 2008). In contrast, if a major focus in the perception of social group is not the controllability of a specific behavior or trait, but rather the perceived dissimilarity of group members based on their ethnic or cultural origin, essentialist perception of a group points to the meaningfulness of group membership and the unchangeability of group attributes, and essentialist beliefs can thus justify prejudiced attitudes toward these social groups (cf. Prentice & Miller, 2007). Accordingly, research consistently indicates positive relationships between endorsement of essentialist lay theories, as exemplified by BGD, and prejudice against different ethnic groups. Notably, Jayaratne et al. (2006) also reported results indicating that White Americans’ BGD is positively related to prejudice toward African Americans. Likewise, Keller (2005) found that the biological component of essentialism is associated with prejudice against Turkish immigrants and with modern sexism. Additionally, heightening the salience of genetic-deterministic information led to an exacerbation of in-group bias (Keller, 2005, Study 3). This last study thus points to the fact that prejudice can be a consequence of the endorsement of essentialist lay theories. However, the idea mentioned above that in some cases acceptance of essentialist explanations might also be an outcome of activated prejudiced attitudes, has not been tested so far.
With regard to stereotyping tendencies, the reasoning of Yzerbyt et al. (1997) again suggests a close linkage to essentialist lay theories. As described above, these authors assumed that essentialist explanations form an integral part of stereotypes. Several studies from these authors provide evidence for the proposed association between essentialist theories and the emergence of social stereotypes. For example, by providing participants with an essentialist category label (as opposed to a trivial label) for described target groups, the authors manipulated availability of an essentialist lay theory for categorization. Results indicated that essentialist group categorization led to greater perceived within-group homogeneity, exacerbated differences between groups, and produced an increased illusory correlation effect (Yzerbyt et al., 2001). Further evidence regarding the relationship between essentialist lay beliefs and stereotyping was reported by Bastian and Haslam (2006). Investigating the association between distinct subcategories of essentialist lay beliefs and stereotype endorsement, these authors found that every subcomponent of essentialist beliefs—belief in immutability and a biological basis of traits, rated discreteness of social categories, and inductive potential of social category information—was positively related to stereotyping and acceptance of group-inherent explanations for social differences.

Furthermore, several studies have specifically investigated the linkage between BGD as a specific dimension of psychological essentialism and stereotyping tendencies. In an intriguing study, Hoffman and Hurst (1990) demonstrated that gender stereotypes arise in an effort to rationalize the distribution of members of fictitious groups into categories. Importantly, stronger stereotypes emerged when groups were described as separate biological species compared with conditions in which no biological basis for categorization was provided. Keller (2005) specifically assessed chronic BGD and tendencies to endorse positive and negative racial stereotypes. In line with the findings mentioned above, he found that BGD was positively related to endorsement of both positive and negative racial stereotypes. Martin and Parker (1995) reported results that are particularly interesting within the scope of this article. The authors measured beliefs about the causes of gender differences and found that the more individuals use biological factors to account for gender differences, the more the sexes are seen to differ. Notably, these authors also assessed the lay belief that socialization causes gender differences, which may be conceived as a part of BSD as we conceptualize it. Paralleling our reasoning, Martin and Parker found that attributions of social and biological causes were not negatively related but largely independent and, more importantly, that a tendency to attribute differences between sexes to socialization also resulted in greater perceived gender differences. This result suggests that BSD also heightens perceived differences between social categories and can thus serve as a basis of stereotyping.

In sum, we propose that BSD constitutes a basis of essentialist theorizing that complements the biological component of essentialism, BGD. As described above, this means that BSD and BGD should not be antithetical endpoints of one dimension of essentialism. Rather, these two lay theories should form a factorial structure with two largely independent dimensions, which are, if anything, weakly positively correlated. With regard to measuring these two lay beliefs, this implies that both lay theories should be assessed independently. Accordingly, both lay theories should not be measured as two end poles of one bipolar dimension (as in studies by Furnham, Johnson, & Rawles, 1985). Second, assessment should allow respondents to rate acceptance of one lay belief uninfluenced by the rating of the other lay theory. Therefore, it is important that both lay theories are assessed separately so that participants do not conclude from conversational logic (Grice, 1975) that consistent responding required weighing the relative importance of BSD and BGD (e.g., Dambrun, Kamiejski, Haddadi, & Duarte, 2009, assessed belief in the power of social forces and BGD within one set of items and observed a slightly negative correlation between the two scales; from our perspective, this reflects individuals’ tendency to follow the maxim of relation as outlined in Grice’s, 1975, model of conversational logic).

With regard to the associations of BSD and BGD with proposed core characteristics, functions, and consequences of essentialist lay theories, we propose complementary relationships of both lay theories with most sociocognitive concepts. Importantly, if BSD adds substantially to the biological component of essentialism, these associations with core characteristics, functions, and consequences should remain significant even when BGD is controlled for. With regard to the proposed functions of essentialist lay theories, we thus predict that both BGD and BSD are (independently from each other) related to indicators of epistemic needs, such as need for closure (Webster & Kruglanski, 1994), intolerance of ambiguity (Badner, 1962), and preference for consistency (Cialdini, Trost, & Newsom, 1995), and to ideological motives, such as social dominance orientation (Pratto et al., 1994), right-wing authoritarianism (Altemeyer, 1996), and hierarchy-enhancing ideologies (e.g., patriotism, nationalism, Kosterman & Feshbach, 1989; Protestant ethic, Katz & Hass, 1988). In a similar vein, we expect that both lay theories contribute to the prediction of negative consequences associated with essentialism, such as stereotyping, prejudice, and discriminatory tendencies. Importantly, each lay theory should contribute uniquely and substantially to the variance explained in the criterion variables. Additionally, we suggest that the link between BSD and prejudice is causal in nature and test the above-proposed bidirectionality of this causal relationship.

Finally, both BSD and BGD should be related to core characteristics of essentialist lay theories: Both lay theories should entail a strong tendency to apply lay dispositionist thinking (Poon & Koehler, 2006), and both should be related to a greater perceived inductive potential of person information related to a person’s essence and the perceived homogeneity of social groups. However, with regard to relations between both lay theories and the latter two concepts, differential hypotheses can be derived based upon our discussion of specific characteristics of both lay theories. As discussed above, information about social features of a person should be perceived as specifically relevant and informative by individuals who strongly endorse BSD. In contrast, perceived inductive potential of genetic person information should be particularly high for persons who believe strongly in genetic determinism. Likewise, we predict that groups formed on the basis of social features are perceived as homogeneous entities particularly by persons endorsing BSD, and group homogeneity is perceived as specifically high for genetic groups by individuals endorsing BGD. The five correlational studies and two experiments reported below were designed to test these assumptions empirically.
Overview

The correlational studies were designed to test the validity and reliability of the newly developed BSD scale and to examine hypotheses concerning the relation between BSD and BGD, core characteristics of essentialist thinking, and motivational correlates of both lay beliefs. All seven studies addressed several important social-cognitive correlates and consequences of BSD and BGD. We first report the results obtained in the correlational studies. Specifically, we report on the psychometric properties of the newly developed BSD scale. Moreover, we examine the hypothesis that BSD and BGD constitute distinct dimensions of a general tendency to endorse essentialist lay theories, rather than two antithetical end poles of one underlying dimension of essentialist beliefs. Also, we discuss analyses addressing the proposed core characteristics of both lay theories and motivational correlates of BSD and BGD. Finally, we report on the associations between the BSD and BGD scales and important constructs that have been discussed as consequences of essentialist beliefs, such as the endorsement of stereotypes and prejudice as well as discriminatory tendencies.

Two additional experiments examine the causal role of BSD regarding prejudice. Specifically, in Study 6, social-deterministic information was rendered accessible (or not), and feelings toward ingroup and outgroup members were assessed in persons scoring high or low on the BSD scale. In contrast, Study 7 examines endorsement of social-deterministic beliefs after the activation of prejudiced attitudes in persons habitually endorsing low or high levels of prejudice.

Studies 1–5

Method

Samples in Studies 1–5. Participants were students at a German university who were paid from €2 to €5 for participation (depending on the length of the respective questionnaire; see Table 1 for further information on participants in each of the five samples). In Studies 1, 2, 3, and 5, students completed the questionnaire in a laboratory room on campus. In Study 4, students were handed the questionnaire in class, filled it out at home, and returned it at the next class. Participants received a package of questionnaires in each of the studies. Questionnaires contained a large battery of measures, including materials pretested for other studies and German translations of different questionnaires for validation purposes. Results presented below focus on the constructs relevant in the present context.

Table 1

<table>
<thead>
<tr>
<th>Study</th>
<th>n*</th>
<th>Women</th>
<th>Men</th>
<th>Mean age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>87</td>
<td>46</td>
<td>41</td>
<td>22.2</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>45</td>
<td>54</td>
<td>23.2</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>64</td>
<td>35</td>
<td>22.3</td>
</tr>
<tr>
<td>4</td>
<td>157</td>
<td>71</td>
<td>86</td>
<td>21.5</td>
</tr>
<tr>
<td>5</td>
<td>120</td>
<td>58</td>
<td>61</td>
<td>22.0</td>
</tr>
</tbody>
</table>

*a Includes participants who did not indicate their sex.

Measures. Participants in all five studies completed questionnaires including a set of self-report scales designed to assess a variety of different constructs (see below), as well as the newly developed BSD scale and a scale measuring BGD; these two measures are described next. Unless otherwise noted, participants responded on a 7-point rating scale ranging from not at all true to completely true.

BSD scale. To create the BSD scale, we initially generated a large set of items designed to assess individuals’ belief that diverse social factors such as social origin or parents’ upbringing determine human life (i.e., behavioral tendencies and personality) by shaping a person’s essential characteristics. In several pretest studies, we reduced the number of items based on factor analyses and reliability analyses, which resulted in a final set of 12 items. A sample item reads “What a person thinks and does is the product of his or her social origin.” The 12 items included in the BSD scale are shown in Table 2.

BGD scale. Keller (2005) published a scale designed to measure BGD. It consists of 18 items reflecting the belief that human behavior and personality are determined by genetic factors; a sample item reads “I believe that many talents in humans can be traced back to genetic causes.” The average reliability (Cronbach’s alpha) of the BGD scale in our studies was .87 (range: .84–.89). The BGD scale has proven to be a reliable and valid measure of the biological component of essentialist lay beliefs (cf. Keller, 2005; Keller & Bless, 2004).

Correlates of essentialism and distinct characteristics of BSD and BGD. We included four scales in our studies to examine associations to proposed correlates of essentialist lay theories and distinct characteristics of BSD and BGD: the belief that personality characteristics are inalterable, the tendency to draw dispositional attributions, and two self-developed scales assessing core characteristics of essentialist theorizing: perceived group homogeneity and the tendency to perceive great inductive potential in person information that refers to an individual’s essential features.

Implicit entity theory. Dweck’s (1999) Kind of Person Scale assesses interindividual differences in lay belief in the stability of human characteristics. A short version of this scale was included in two of the five studies (reliabilities: α = .91 and .89). A sample item of the Kind of Person Scale reads “People can do things differently, but the important parts of who they are can’t really be changed.”

Lay dispositionalism. By drawing on previous work by Chiu et al. (1997), Poon and Koehler (2006) introduced a scale that taps two facets of lay dispositionalism: the tendency (a) to predict behavior confidently in a particular situation from given traits and to infer a trait quickly from a displayed behavior, and (b) to predict consistency of traits across different situations and over time. A sample item of the Predicting Traits From Behavior subscale reads “Person A behaved in a more intelligent way than Person B in a particular situation. What is the probability that Person A is more strongly characterized by the trait intelligent than Person B?” Respondents answered by providing a probability from 0% to 100%. We used this scale to assess lay dispositional tendencies for four traits (intelligence, friendliness, ambition, and politeness) in Study 1. Reliabilities of the two subscales (inference of behaviors and traits, situational and temporal consistency) were .82 and .77, respectively.

Perceived group homogeneity. In Studies 3 and 4, participants were asked to rate the similarity between people who share
Table 2
Factor Loadings of the 12 Belief in Social Determinism Items, Eigenvalues, and Proportion of Variance Explained by First Factor in Studies 1–4

<table>
<thead>
<tr>
<th>Scale item</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An individual’s personality often reveals the social origin of the person.</td>
<td>.76</td>
<td>.71</td>
<td>.69</td>
<td>.60</td>
</tr>
<tr>
<td>2. I am convinced that the social background a person comes from is strongly reflected in the person’s character.</td>
<td>.80</td>
<td>.73</td>
<td>.58</td>
<td>.68</td>
</tr>
<tr>
<td>3. Even when individuals left their original social environment their behavior is still strongly determined by their social origin.</td>
<td>.45</td>
<td>.57</td>
<td>.42</td>
<td>.58</td>
</tr>
<tr>
<td>4. The social environment often has a much stronger impact on a person’s behavior than the individual’s personal attributes.</td>
<td>.29</td>
<td>.61</td>
<td>.43</td>
<td>.51</td>
</tr>
<tr>
<td>5. I do not believe that human individuals are strongly affected in their behavior by their social origin. (R)</td>
<td>.20</td>
<td>.32</td>
<td>.40</td>
<td>.53</td>
</tr>
<tr>
<td>6. It is possible to make fairly good predictions concerning the personality traits of an individual based on the knowledge of his or her social origin.</td>
<td>.70</td>
<td>.64</td>
<td>.67</td>
<td>.56</td>
</tr>
<tr>
<td>7. The capabilities of people can to a large degree be traced back to their social origin.</td>
<td>.32</td>
<td>.47</td>
<td>.45</td>
<td>.24</td>
</tr>
<tr>
<td>8. The behavior of individuals is to a large degree determined by their social environment.</td>
<td>.51</td>
<td>.60</td>
<td>.35</td>
<td>.50</td>
</tr>
<tr>
<td>9. Due to their distinct living conditions, individuals who were brought up in an affluent home develop essentially different personality characteristics than individuals who were brought up in a poor home.</td>
<td>.67</td>
<td>.67</td>
<td>.57</td>
<td>.53</td>
</tr>
<tr>
<td>10. I think that the character of individuals is only to a very limited degree determined by their social origin. (R)</td>
<td>.67</td>
<td>.64</td>
<td>.61</td>
<td>.64</td>
</tr>
<tr>
<td>11. What a person thinks and does is the product of his or her social origin.</td>
<td>.54</td>
<td>.54</td>
<td>.57</td>
<td>.60</td>
</tr>
<tr>
<td>12. People with similar social origin behave very similarly.</td>
<td>.53</td>
<td>.47</td>
<td>.66</td>
<td>.41</td>
</tr>
<tr>
<td>Eigenvalue of first factor</td>
<td>4.36</td>
<td>4.70</td>
<td>4.09</td>
<td>4.07</td>
</tr>
<tr>
<td>Accounted variance (%)</td>
<td>36.33</td>
<td>39.20</td>
<td>34.04</td>
<td>33.94</td>
</tr>
</tbody>
</table>

Note. Order of items corresponds to order in questionnaires. R = reverse coded.

Table 2 indicates the factor loadings, eigenvalues, and proportion of variance explained by the first factor in Studies 1–4 for the 12 belief in social determinism items. Each item is numbered, and the corresponding factor loadings for each study are provided. The eigenvalues and the proportion of variance explained by the first factor are also shown. The table demonstrates a consistent pattern of factor loadings across the studies, indicating a strong social determinism belief. The proportion of variance explained ranges from 34.04% to 39.20%, suggesting that the first factor is a significant contributor to the variance in the items. The reverse coding of items is noted, and the order of items corresponds to the order in the questionnaires.

A certain group characteristic; a sample item reads “Persons who work in the same profession are (1) not at all similar . . . (7) very similar.” Six items were assessed, with three items referring to rating similarity between people who share a social characteristic (same profession, neighborhood, parents’ parenting style) and three items pertaining to similarity between people sharing a biological feature (same skin color, blood type, body height). The three homogeneity ratings of social groups (α = .75 and .68) and of biological groups (α = .68 and .69) were aggregated to form an index of perceived social group homogeneity and of biological group homogeneity, respectively.

Perceived inductive potential of essentialist person information. Participants answered six items assessing the perceived inductive potential of biological and social person information in Study 4. A sample item reads “Knowledge about the fact that a person was raised in a working class family and environment allows many inferences regarding the person’s characteristics and traits.” The three items assessing perceived inductive potential of social information (working class background, aristocratic background, rich family; α = .83) and the three items pertaining to perceived inductive potential of biological information (genetic “fingerprint,” structure and weight of brain, skin color; α = .65) were aggregated for separate indices, reflecting the attribution of inductive potential to social and biological person information.3

Scales representing epistemic needs and tendencies. We assessed several scales pertaining to epistemic needs and tendencies across the five studies to examine relations of BSD and BGD to these constructs.

Need for cognitive closure. The Need for Cognitive Closure Scale by Webster and Kruglanski (1994) is an established measure to assess the epistemic need for definitive and simple answers. A sample item of this scale reads “I don’t like to go into a situation without knowing what I can expect from it.” We used a short version of this scale (reliabilities α = .75–.85) in Studies 1–4 and the full version in Study 5 (α = .89); however, in the latter case we replaced the items of the Decisiveness facet with alternative items proposed by Roets and Van Hiel (2007). These items clearly tap the need to come to a decision as opposed to the original items, which confound need and ability to decide (cf. Roets & Van Hiel, 2007).

Need for cognition. Cacioppo and Petty (1982) developed the Need for Cognition Scale, a widely used scale measuring a person’s tendency to engage in and enjoy thinking. Studies 4 and 5 incorporated items of this scale in a German translation by Bless, Wänke, Bohner, Fellhauer, and Schwarz (1994; reliabilities: α = .70 and .71). One reverse-coded sample item of this scale is “I find little satisfaction in deliberating hard and for long hours.”

Dogmatism. We included Altemeyer’s (2002) DOG Scale in two studies (Studies 2 and 5; reliabilities: α = .88 and .83) to assess a person’s tendency for “stable and unjustified certainty” (Altemeyer, 2002) as another subcomponent of epistemic needs. A
sample item of this scale is “The things I believe are so completely true, I could never doubt them.”

**Intolerance of ambiguity.** We chose the modification by MacDonald (1970) of the Rydell and Rosen (1966) Intolerance of Ambiguity Scale in Study 5 to examine relationships between BGD, BSD, and intolerance of ambiguity. Compared with several other measures of intolerance of ambiguity (e.g., the scale by Budner, 1962), this scale has proven satisfactory psychometric properties (Furnham, 1994). The reliability was acceptable in our study (α = .67). A sample item of this scale reads “I have always felt that there is a clear difference between right and wrong.”

**Preference for consistency.** A somewhat distinct aspect of epistemic tendencies is represented by Cialdini’s Preference for Consistency Scale (Cialdini et al., 1995). It assesses three aspects of an individual’s preference for consistency: (a) the desire of a person to be consistent in her or his own responses, (b) the wish to appear consistent to others, and (c) the desire that others be consistent. A sample item for the first aspect is “I typically prefer to do things the same way.” We included a short version of this scale in Study 5 (reliability: α = .86).

**Openness to experience.** Openness to experience is one of the Big Five personality dimensions and comprises a person’s need for variety, novelty, and change (McCrae & Costa, 1999). We assessed this facet of epistemic needs in two studies (Studies 2 and 5; reliabilities: α = .60 and .58) with items developed by McCrae and Costa (1987), which require respondents to rate themselves on a 7-point semantic differential with adjective pairs (e.g., conventional–original).

**Sensation seeking.** The tendency of individuals to make new, complex, and intensive experiences is described by Zuckerman’s (1994) Sensation Seeking Scale; this concept thus comprises another subscale of the epistemic motive. We used the subscale Experience Seeking in Study 5, which assesses a person’s tendency to seek novel and unconventional experiences, because this subscale seems most closely related to epistemic needs. A sample item of this subscale is “I like to try new foods that I have never tasted before.” The reliability for this scale was somewhat low (α = .55) in our study, but it is consistent with scale characteristics reported in other studies (e.g., Ridgeway & Russell, 1980; Rowland & Franken, 1986).

**Scales representing ideological motives.** To test the proposition that BGD and BSD are related to ideological motives, we included in our studies several scales representing facets of this construct.

**Social dominance orientation.** Social dominance orientation pertains to a person’s degree of preference for inequality among social groups (Pratto et al., 1994). Studies 3–5 incorporated the Social Dominance Orientation Scale; reliabilities of the scale in our studies ranged from .80 to .87. A sample item is “Some groups of people are simply inferior to others.”

**Right-wing authoritarianism.** A different facet of the ideological motive is reflected in Altemeyer’s (1996) Right-Wing Authoritarianism Scale, which assesses three aspects of authoritarian attitudes: authoritarian submission, aggression, and conservatism. We included a short version of this scale in Studies 2–5 (reliabilities: α = .77–.83); a sample item reads “The real keys to the ‘good life’ are obedience, discipline and sticking to the straight and narrow.”

**Patriotism and nationalism.** Patriotic and nationalist attitudes can be understood as examples of hierarchy-enhancing ideologies in terms of social dominance theory (e.g., Sidanius & Pratto, 1999), thus as theories that stabilize a hierarchical social order and justify social inequalities. We tested the association of patriotism and nationalism with BSD and BGD in Study 4, where patriotic (α = .83) and nationalist (α = .68) attitudes were measured with scales by Kosterman and Feshbach (1989). The items were adapted to fit the German context; a sample item of patriotism is “I love my country,” and a sample of nationalism is “In view of Germany’s moral and material superiority, it is only right that we should have the biggest say in deciding European Union policy.”

**Protestant ethic.** Protestant work ethic describes the lay belief that personal success in life (social status, wealth, etc.) is the sole product of an individual’s effort and achievement motivation. This lay theory therefore represents another form of hierarchy-enhancing legitimizing myth in terms of social dominance theory (cf. Sidanius & Pratto, 1999), as it can serve as justification and rationalization of social inequalities. Study 2 incorporated a short version (α = .65) of the Protestant Ethic Scale by Katz and Hass (1988). A sample item of the Protestant Ethic Scale reads “Most people who don’t succeed in life are just plain lazy.”

**Proposed consequences of essentialist lay theorizing.** In our studies we assessed three constructs that are typically understood as consequences of an essentialist perception of individuals and groups: stereotyping, prejudice, and discriminatory tendencies.

**Negative racial stereotyping.** Negative stereotyping was assessed as in Keller’s (2005) studies, by asking participants to rate the degree to which four traits are descriptive of Turkish people (Study 3: conceited, lazy, aggressive, dishonest; α = .76) or of persons of African descent (Studies 4 and 5: violent, lazy, undisciplined, unintelligent; α = .83).

**Prejudice.** Studies 1–4 included a German adaptation of the Prejudice Scale by Pettigrew and Meertens (1995), which assesses prejudice against Turkish immigrants with 20 items. A sample item is “Turkish people have jobs that the Germans should have.” Pettigrew and Meertens originally conceptualized the scale as comprising the two subscales Subtle and Blatant prejudice. However, recent work questioned the proposed distinction between these two concepts and documented that the scale should better be regarded as a unidimensional measure of general prejudice (e.g., Coenders, Scheepers, Sniderman, & Verberk, 2001; Gattino, Miglietta, & Testa, 2006). In all four studies, we therefore conducted factor analyses (principal axis factor analysis, a priori restriction of extraction on two factors, oblique rotation) to examine the structure of the Prejudice Scale. In line with prior findings, results in all four samples indicated that rather than consistently constitute two distinct factors, Blatant and Subtle prejudice items loaded primarily on the same factor. Furthermore, the Blatant and Subtle subscales were highly intercorrelated (correlations of both subscales in the four studies: .70, .57, .44, and .47, respectively). Thus, we decided to form an overall index of general prejudice by aggregating across the 20 items (total alpha of this general prejudice scale: .83–.87).

**Discriminatory tendencies.** A measure of discriminatory tendencies was included in Studies 3 and 4. It assesses participants’ acceptance of discrimination (i.e., confinement of civil rights) against persons without German citizenship and consists of three (Study 3: α = .70) and 11 items (Study 4; α = .92), respectively. A sample item reads “Persons without German citizenship should not be allowed to produce newspapers or magazines.”
Results

Psychometric properties of the BSD scale. In a first step, we analyzed factor structure and reliability of the BSD scale as well as the relationship between BSD and socially desirable response tendencies to ensure satisfying psychometric properties of the newly developed scale.

Factor structure of BSD scale. To examine the factorial structure of the BSD scale, we conducted principal axis factor analyses with varimax rotation separately for each data set obtained in the four studies (data from Study 5 were excluded because BSD was assessed with a short version comprising 10 items). One dominant factor emerged in all four analyses: Scree plots indicated a steep decline in eigenvalues between the first and second factor (all eigenvalues of second factors were less than 1.74). All 12 items showed substantial loadings on the first factor (see Table 2). In combination, these results support the coherence and unidimensionality of the items included in the BSD scale.

Reliability of BSD scale. Internal consistency proved to be satisfactory in all five studies, with Cronbach’s alpha ranging from .81 to .88. Test–retest reliability was assessed in a separate study, where 86 participants completed the BSD scale twice, approximately 10 weeks apart. Results indicated an acceptable stability of BSD scale (r = .67). Thus, the BSD scale was found to have good internal consistency.

Socially desirable response tendencies and BSD. We assessed the relationship between BSD and socially desirable response tendencies (Crowne & Marlowe, 1960; α = .59) in Study 3 (N = 100). The correlation between BSD and social desirability was nonsignificant (r = .02), supporting the notion that responses on the BSD scale are not influenced by socially desirable response tendencies.

Endorsement and structural relations of BSD and BGD. To examine our hypothesis mentioned above that BSD represents a widespread lay theory that is complementary to BGD, we analyzed endorsement and dimensionality of BSD and BGD in the five correlational studies.

Endorsement of BSD and BGD in Studies 1–5. Table 3 depicts means and standard deviations of BSD and BGD scores in the five studies, indicating average scores on both scales near the scale midpoint and thus substantial endorsement of BSD and meaningful interindividual variance. Figure 1 shows the frequency distribution of BSD and BGD scores across all five studies. Participants were categorized into 36 groups based on their mean scores on both scales. The fact that this distribution shows a single modal area near the midpoint of both scales provides evidence supporting the proposed bidimensionality of BSD and BGD. Note that we should observe a bimodal pattern—or at least a substantial number of cases in the regions representing antithetical endpoints (i.e., in the areas in front left and rear right corner of the frequency space)—if the two lay beliefs represented opposing convictions.

Dimensionality of BSD and BGD. In a further examination of our hypothesis that BSD and BGD represent distinct but nonantithetical lay belief dimensions, we computed bivariate correlations between BSD and BGD scores in Studies 1–5. As expected, we did not obtain negative correlations between BSD and BGD in any study (r₁ = .24, p < .05; r₂ = .06, p > .10; r₁ = .22, p < .05; r₂ = .29, p < .01; and r₁ = .07, p > .10, respectively); in fact, BSD and BGD were moderately positively correlated in three studies. This speaks to the fact that BSD and BGD do not represent opposite end poles of one lay belief dimension but that both scales assess specific aspects of an underlying general component of the belief system.

As a somewhat more stringent test of the proposed bidimensionality of BSD and BGD, we combined the data obtained in Studies 1–4 (yielding a total sample of 444; data from Study 5 were excluded because BSD and BGD were assessed with a short version of the scales comprising 10 items each) and conducted a principal axis factor analysis with oblique rotation including the 12 BSD and 18 BGD items (a priori restricting the extraction procedure to two factors; see Table 4). As expected, the pattern of factor loadings clearly indicates that the items of the two scales represent two distinct but not antithetical dimensions. Specifically, all BGD items had substantial loadings on the first factor, whereas all BSD items loaded on the second factor.

Taken together, the analyses of the endorsement and relations of BSD and BGD as assessed with the two scales indicate that the two lay beliefs represent distinct but not opposing elements of one general essentialist belief system.

Associations of BSD and BGD with characteristic elements of essentialism and with motivational concepts. With respect to the relations of BSD and BGD to proposed characteristics of essentialist lay theories and to motivational concepts, we computed partial correlations of the respective constructs with BSD and BGD. Our aim in the present research was to show that BSD is an important component of essentialist lay theorizing that comple-

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>87</td>
<td>3.59</td>
<td>0.87</td>
<td>4.23</td>
<td>0.85</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>3.59</td>
<td>0.80</td>
<td>4.32</td>
<td>0.92</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>3.72</td>
<td>0.89</td>
<td>4.33</td>
<td>0.86</td>
</tr>
<tr>
<td>4</td>
<td>157</td>
<td>3.29</td>
<td>0.90</td>
<td>3.93</td>
<td>0.85</td>
</tr>
<tr>
<td>5</td>
<td>120</td>
<td>3.98</td>
<td>0.89</td>
<td>4.11</td>
<td>1.02</td>
</tr>
</tbody>
</table>

Note. Response scales ranged from 1 (not at all true) to 7 (completely true).

Values based on short versions of BGD and BSD scales with 10 items.

4 In three of five studies (Studies 1, 3, and 4), a small to medium (Cohen’s d = 0.36–0.37) gender effect emerged, indicating that men endorsed BSD slightly stronger than women. No gender differences were found for BGD scores.

5 Corresponding analyses conducted separately for the four studies revealed a similar pattern, with two dominant factors (eigenvalues were greater than 4.0) and main factor loadings of BGD and BSD items on the respective factor.

6 The only exception is Item 8 of the BGD scale, which showed a secondary loading (−.29) on the second factor. Note that this is the only item included in the BGD scale that includes a reference to the influence of social factors on personality development (“I think that the upbringing by parents and the social environment have far greater significance for the development of abilities and personal traits than genetic dispositions”). We suggest that this item should be dropped from the BGD scale in future studies given its somewhat mixed content.
MENTS THE BIOLOGICAL COMPONENT OF PSYCHOLOGICAL ESSENTIALISM ASSESSED BY BGD, AND IS ASSOCIATED WITH IMPORTANT SOCIOCOGNITIVE CONSTRUCTS AND SIGNIFICANT CONSEQUENCES OVER AND ABOVE BGD. THEREFORE, IT SEEMS MOST MEANINGFUL TO CONSIDER THE ASSOCIATIONS OF EACH SCALE WITH RELEVANT OTHER CONSTRUCTS WHILE CONTROLLING FOR THE SCORES ON THE OTHER SCALE. ACCORDINGLY, IN THE FOLLOWING SECTION WE REPORT ON PARTIAL CORRELATIONS.

RELATIONS OF BSD AND BGD TO PROPOSED CHARACTERISTICS OF ESSENTIALIST LAY THEORIES. AS CAN BE SEEN IN TABLE 5, RESULTS INDICATE THAT BGD, BUT NOT BSD, WAS POSITIVELY RELATED TO THE KIND OF PERSON SCALE, (DIFFERENCE BETWEEN PARTIAL CORRELATIONS ACROSS BOTH STUDIES) \( t(252) = 3.64, p < .01 \). RESULTS CONCERNING LAY DISPOSITIONIST THINKING, HOWEVER, PROVIDE EVIDENCE FOR THE IDEA THAT BOTH LAY THEORIES IMPLY A TENDENCY TO INFERENCE ESSENTIAL DISPOSITIONS AND TO NEGLECT VARIABLE SITUATIONAL INFLUENCES: BOTH BGD AND BSD SHOWED POSITIVE PARTIAL CORRELATIONS WITH THE TENDENCIES TO INFERENCE BEHAVIOR FROM TRAITS AND TRAITS FROM BEHAVIORAL INSTANCES, AND WITH PERCEIVED CROSS-SITUATIONAL AND TEMPORAL STABILITY OF DISPOSITIONS.

TWO FURTHER CENTRAL ASPECTS OF ESSENTIALIST THINKING ARE REected in the tendency (a) to attribute a great inductive potential to person information that is perceived as related to a person’s essence and (b) to construe social groups as homogeneous entities (cf. Yzerbyt et al., 2001). We therefore theorized above that both BGD and BSD should be related to these two aspects but that these relationships should be qualified by the type of person information and type of group in question (genetic vs. social). To investigate these assumptions, we conducted two additional analyses in which we included the two homogeneity ratings (genetic vs. social groups; across both samples) and the two ratings of perceived inductive potential of person information (genetic vs. social person information) as within-subject factors, respectively, predicted by both BGD and BSD. Significant interaction terms of both BSD and BGD with the within-subject factors—type of person information or type of group—emerged in both analyses: (inductive potential) BGD \( \times \) Type of Information, \( F(1, 153) = 9.43, p < .01 \); BSD \( \times \) Type of Information, \( F(1, 153) = 23.46, p < .001 \); (perceived group homogeneity) BGD \( \times \) Type of Group, \( F(1, 252) = 15.36, p < .001 \); BSD \( \times \) Type of Group, \( F(1, 252) = 7.85, p < .01 \). Thus, level of group homogeneity perceived in genetic or social groups and inductive potential attributed to genetic or social person information differs systematically dependent on BGD and BSD scores. The pattern of correlations in Table 5 further supports this notion: Whereas BGD is predominantly associated with a tendency to attribute inductive potential to biological person information, (difference in partial correlations) \( t(153) = 4.22, p < .001 \), and to perceive genetic groups as being homogeneous, (difference in partial correlations across the two samples) \( t(252) = 1.89, p < .10 \), BSD shows stronger relations to perceived inductive potential of social person information, (difference in partial correlations) \( t(153) = 1.99, p < .05 \), and perceived homogeneity of social

Table 4

<table>
<thead>
<tr>
<th>Scale item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>6 (R)</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>10 (R)</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>8 (R)</td>
<td>.55</td>
<td>-.29</td>
</tr>
<tr>
<td>7</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>.49</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>14 (R)</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>BSD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>10 (R)</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.65</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>.54</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>.50</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>.45</td>
<td></td>
</tr>
<tr>
<td>5 (R)</td>
<td>.40</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>.34</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>6.77</td>
<td>3.92</td>
</tr>
<tr>
<td>Explained variance (%)</td>
<td>22.57</td>
<td>13.07</td>
</tr>
</tbody>
</table>

Note. Item numbers correspond to order of BGD items in Keller (2005) and to order of BSD items in Table 2. Reverse-coded (R) items were recoded before being entered into factor analysis. Factor loadings greater than or equal to .20 are reported in this table.

Figure 1. Frequency distribution based on belief in social determinism (BSD) and belief in genetic determinism (BGD) scores across Studies 1–5 (N_{Total} = 564).
groups, (difference in partial correlations across the two samples) 
$t(252) / H110053.12, p / H11021.01.
Taken together, ... assessed in the respective study.
† $p / H11021.10. / H11569p / H11021.05. / H11569/H11569p / H11021.01.
12 RANGEL AND KELLER

Table 5
Partial Correlations (and Bivariate Correlations) of Belief in Genetic Determinism (BGD) and Belief in Social Determinism (BSD)
With Indicators of Characteristic Elements of Essentialist Lay Theories

<table>
<thead>
<tr>
<th>Construct</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicit entity theory</td>
<td>—</td>
<td>.30**</td>
<td>(.28**)</td>
<td></td>
<td>—</td>
<td>.16</td>
<td>(−.09)</td>
<td>−.02</td>
</tr>
<tr>
<td>Lay dispositionalism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inference of behavior and trait</td>
<td>.23*</td>
<td>(.30**)</td>
<td></td>
<td></td>
<td>.35**</td>
<td>(.38**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situational and temporal consistency</td>
<td>.33**</td>
<td>(.39**)</td>
<td></td>
<td></td>
<td>.25**</td>
<td>(.31**)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inductive potential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social information</td>
<td>—</td>
<td>—</td>
<td>.19*</td>
<td>(29**)</td>
<td>—</td>
<td>—</td>
<td>.40**</td>
<td>(.45**)</td>
</tr>
<tr>
<td>Genetic information</td>
<td>—</td>
<td>—</td>
<td>.50*</td>
<td>(.53**)</td>
<td>—</td>
<td>—</td>
<td>.03</td>
<td>(18*)</td>
</tr>
<tr>
<td>Perceived group homogeneity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social groups</td>
<td>—</td>
<td>.20*</td>
<td>(.26*)</td>
<td>—</td>
<td>.31*</td>
<td>(.35**)</td>
<td></td>
<td>.34**</td>
</tr>
<tr>
<td>Genetic groups</td>
<td>—</td>
<td>.33**</td>
<td>(.34**)</td>
<td>.33**</td>
<td></td>
<td>.04†</td>
<td>(.11)</td>
<td>.24**</td>
</tr>
</tbody>
</table>

Note. Dashes indicate specific variable was not assessed in the respective study.
*p < .05. † †p < .01.

Together, the results indicate that BSD and BGD are both uniquely associated with concepts that are characteristic of essentialist thinking, such as dispositionalism, the perceived inductive potential of essence-related person information, and perceived group homogeneity. Although stability of personality characteristics is more closely related to BGD than BSD, our findings clearly indicate that BSD as operationalized in the present research does not imply a belief in malleability or temporal variability of personal characteristics. Given that the BSD scale is designed to measure the belief in a socially shaped essential social character, this finding corroborates the assumption that essentialist beliefs can be based on a perspective that acknowledges the power of social forces.

Constructs reflecting epistemic needs and tendencies. We hypothesized that BSD and BGD can serve epistemic motives by providing order and stability and by serving as a means for reducing fear and uncertainty. To put this hypothesis to a test, we assessed the correlations between BSD and BGD, on the one hand, and several measures related to the epistemic motives, on the other. Again, we computed partial correlations between the epistemic constructs and BSD and BGD to examine the unique associations of each lay theory. Overall, the observed correlations depicted in Table 6 support our hypothesis regarding the relation of both BSD and BGD with epistemic needs, although the pattern is not perfectly consistent. As expected, openness to experience is generally negatively related to both BSD and BGD, although the partial correlations are significant in only two of four cases. This supports the notion that BSD and BGD reflect a resistance (rather than openness) to change and a desire to maintain the status quo. The unique negative associations of both BGD and BSD with experience seeking further support the idea that both lay theories are related to a tendency to avoid change and new experiences. The positive relations of both BSD and BGD with dogmatism, intolerance of ambiguity, and preference for consistency, on the other hand, speak to the fact that both lay beliefs are equally related to closed-mindedness and a desire for a simple, unambiguous, and consistent reality. With respect to these constructs, BSD and BGD seem to show similar correlations (although in some cases the

Table 6
Partial Correlations (and Bivariate Correlations) of Belief in Genetic Determinism (BGD) and Belief in Social Determinism (BSD)
With Indicators of Epistemic Motives

<table>
<thead>
<tr>
<th>Construct</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
<th>Study 5</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
<th>Study 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for closure</td>
<td>−.08</td>
<td>(−.02)</td>
<td>.04</td>
<td>(.06)</td>
<td>.10</td>
<td>(.13)</td>
<td>.22</td>
<td>(.23)</td>
<td>.23</td>
<td>(.22)</td>
</tr>
<tr>
<td>Need for cognition</td>
<td>—</td>
<td>.31**</td>
<td>(.32**)</td>
<td></td>
<td>−.20</td>
<td>(−.18)</td>
<td>−.12</td>
<td>(−.12)</td>
<td>−.09</td>
<td>(−.10)</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.15</td>
<td>(.16)</td>
<td></td>
<td></td>
<td>.26</td>
</tr>
<tr>
<td>Intolerance of ambiguity</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.30</td>
<td>(.31**)</td>
<td></td>
<td></td>
<td></td>
<td>.24</td>
</tr>
<tr>
<td>Preference for consistency</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.30</td>
<td>(.31**)</td>
<td></td>
<td></td>
<td></td>
<td>.22</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>—</td>
<td>−.14</td>
<td>(−.15)</td>
<td></td>
<td>−.19</td>
<td>(−.19)</td>
<td></td>
<td></td>
<td>−.23</td>
<td>(−.24)</td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>−.26</td>
<td>(−.26*)</td>
<td></td>
<td></td>
<td>−.13</td>
<td>(−.14)</td>
</tr>
</tbody>
</table>

Note. Dashes indicate specific variable was not assessed in the respective study.
*p < .10. † †p < .05. † ††p < .01.
strength of the relations differs modestly). In contrast, BSD and BGD showed differential correlations with two other constructs that reflect distinct epistemic motives.

The results obtained in Studies 1–4 with the short version of the Need for Closure Scale indicate that in two of the samples, this component of closed-mindedness was reliably related to BSD, whereas the Need for Closure Scale was consistently largely unrelated to BGD in these four samples. Note that this is inconsistent with previous findings reported by Keller (2005), where BGD was positively correlated with need for closure. Given that the short version of the scale that we used in the present case entails a mixture of items (representing subscales of the full version of the scale), it may be the case that this mixture contributes to the observed inconsistency. To examine the inconsistency of these findings, we used a more elaborate assessment of need for closure (the full 41-item version of the scale) in Study 5 and found a positive association of both BGD and BSD, which is in line with the findings of Keller (2005). Second, the Need for Cognition Scale showed modest negative partial correlations with the BGD scale and was largely unrelated to BSD, (difference of partial correlations across the two samples) $t(273) = 1.72, p < .10$. It thus seems that BGD is more attractive to persons low in need for cognition who prefer simplicity over complexity.

Taken together, the findings concerning relations of BGD and BSD to constructs representing facets of epistemic needs for simple and definitive answers support the notion that both lay theories are uniquely associated with these constructs. It seems that both BGD and BSD can serve epistemic motives by providing order and stability and by reducing fear from uncertainty and thus are complementary in satisfying these needs.

Constructs reflecting ideological motives. As argued in the introduction, we expected independent associations of both BSD and BGD with indicators of ideological motives. However, we hypothesized that BSD, in particular, would be associated with constructs reflecting a special reference to social hierarchies and inequality (i.e., social dominance orientation and hierarchy-enhancing ideologies), as social differences between individuals and groups should be especially salient for people who believe in social determinism. Table 7 depicts results concerning associations of BSD and BGD with ideological constructs; note that we once again computed partial correlations to be able to compare the independent relations of BSD and BGD with these constructs.

As results indicate, we found exactly what we expected: Both BGD and BSD were consistently positively related with right-wing authoritarianism. In contrast, BSD, in particular, was positively related to social dominance orientation, (difference between partial correlations across the three samples) $t(373) = 1.93, p < .10$, and to the hierarchy-enhancing ideology nationalism, (difference between partial correlations) $t(153) = 1.81, p < .10$. BSD also showed higher positive associations to the other assessed hierarchy-enhancing ideologies, patriotism and Protestant ethic, although the differences between partial correlations of BGD and BSD with these two constructs were weak only. (patriotism) $t(153) = 1.52, p = .13$; (Protestant ethic) $t(153) = 1.03, p = .30$. Overall, it seems that attention to and justification of social hierarchies is more closely associated with BSD than with BGD.

In sum, the results reveal that both BSD and BGD are associated with the ideological motive represented by right-wing authoritarianism. Moreover, the results support our notion that particularly BSD is related to ideological constructs reflecting the awareness and appreciation of existing social hierarchies.

Proposed consequences of BSD and BGD. To obtain evidence documenting that BSD significantly and reliably predicts stereotyping, prejudice, and discrimination over and above BGD and other established predictors of the relevant criteria, we conducted hierarchical multiple regression analyses with BGD, implicit entity theory (Dweck, 1999; not assessed in Studies 1 and 2), and need for closure (Webster & Kruglanski, 1994) as predicting stereotyping, prejudice, and discrimination indices in a first step, and included BSD in a second step of analysis. Implicit entity theory and need for closure have been hypothesized as major predictors of stereotyping and prejudice (e.g., Kruglanski & Webster, 1996; Levy, Stroesser, & Dweck, 1998; Neuberg & Newsom, 1993) and thus were included in regression analyses to strengthen our claim that BSD uniquely predicts the negative view and evaluation of outgroups. As a first result, our data replicate Keller’s (2005) findings by demonstrating that BGD is a significant and reliable predictor of negative attitudes toward outgroups (see Table 8). In all analyses, BGD proved to be a significant and important predictor of stereotyping, prejudice, and discrimination, the single exception being the prediction of negative stereotyping in Study 5, where BGD did not contribute significantly ($\beta = .09, p > .10$) to the explanation of stereotyping tendencies. More importantly, our results indicate that BSD is indeed reliably associated with indices of negative stereotyping, prejudice, and discriminatory tendencies, over and above BGD, implicit entity theory, and need for closure.

---

**Table 7**

Partial Correlations (and Bivariate Correlations) of Belief in Genetic Determinism (BDG) and Belief in Social Determinism (BSD) With Indicators of the Ideological Motive

<table>
<thead>
<tr>
<th>Construct</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
<th>Study 5</th>
<th>Study 2</th>
<th>Study 3</th>
<th>Study 4</th>
<th>Study 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right-wing authoritarianism</td>
<td>$0.33^{<strong>} (0.34^{</strong>})$</td>
<td>$0.25^{*} (0.30^{**})$</td>
<td>$0.22^{*} (0.38^{**})$</td>
<td>$0.23^{<em>} (0.24^{</em>})$</td>
<td>$0.26^{<em>} (0.26^{</em>})$</td>
<td>$0.24^{<em>} (0.29^{</em>})$</td>
<td>$0.24^{<em>} (0.35^{</em>})$</td>
<td>$0.33^{<em>} (0.34^{</em>})$</td>
</tr>
<tr>
<td>Social dominance orientation</td>
<td>—</td>
<td>$0.17^{<em>} (0.23^{</em>})$</td>
<td>$0.16^{<em>} (0.21^{</em>})$</td>
<td>$0.06 (0.08)$</td>
<td>—</td>
<td>$0.31^{<em>} (0.34^{</em>})$</td>
<td>$0.20^{<em>} (0.28^{</em>})$</td>
<td>$0.24^{<em>} (0.24^{</em>})$</td>
</tr>
<tr>
<td>Nationalism</td>
<td>—</td>
<td>—</td>
<td>$0.07 (0.16)$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Protestant ethic</td>
<td>$0.09 (0.10)$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>$0.13 (0.20^{*})$</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. Dashes indicate specific variable was not assessed in the respective study. $^{*} p < .10$. $^{* *} p < .05$. $^{* **} p < .01$. 

---
In all three analyses with negative racial stereotyping index as criterion variable, including BSD as predictor led to a considerable increase in variance explained. With regard to prejudice, the inclusion of BSD as a predictor again resulted in substantial increases in variance in all four studies. When discriminatory tendencies were entered as dependent variable, BSD proved to be a significant predictor in Study 3, whereas inclusion of BSD did not significantly increase amount of variance explained in Study 4.

Thus, with one exception, BSD significantly explained variance in stereotyping, prejudice, and discriminatory tendencies, in addition to need for closure, implicit entity theory, and, most importantly, over and above BGD. These results indicate that BSD is an important component of essentialist lay beliefs and associated with important consequences. The additive effects of BGD and BSD again point to the complementary nature of both lay theories.

**Discussion**

In combination, the observed results in Studies 1–5 support our hypotheses regarding the structure and correlates of the two components of psychological essentialism that we addressed in the reported work. It seems most noteworthy that individuals obviously refer to a social version of essentialist lay theories that complements the biological version of essentialism. In this context, it is particularly interesting that the two components of essentialism show largely parallel relations to the constructs that we assessed as indicators of the underlying motives, needs, and correlates of essentialist thinking. In sum, the findings speak to the fact that BSD and BGD represent two complementary dimensions of psychological essentialism (i.e., BSD and BGD do not represent opposite end poles of one underlying dimension of essentialist reasoning). Furthermore, we consistently found substantial endorsement of BSD, which speaks to the fact that BSD actually represents a widespread version of essentialist lay theorizing. This finding renders the previous focus on the biological component of psychological essentialism problematic, and it seems important to complement the analysis by incorporating the social component. The newly developed BSD scale represents a reliable and valid tool for future research in this field.

With respect to the consequences of BSD, the reported evidence regarding negative reactions to outgroups (i.e., stereotyping, prejudice, and discrimination) supports the general notion that essentialism builds a basis of intergroup bias and prejudice. However, given that the evidence reported above is correlational in nature, we cannot be sure whether there actually exists a causal path between BSD and prejudice. Therefore, we conducted two additional experimental studies to address this important issue. As described above, former theorizing and empirical research, though mostly correlational in nature, has conceptualized prejudice as an important consequence of essentialist beliefs. Thus, in Study 6, we tested the hypothesis that endorsement of social-deterministic explanations causally leads to a heightened intergroup bias. However, we also reasoned above that essentialist lay explanations are

**Table 8**

*Standardized Regression Coefficients in Hierarchical Regressions With Proposed Consequences of Essentialist Lay-Theorizing as Criteria, Including Belief in Genetic Determinism (BGD), Need for Closure, and Implicit Entity Theory as Predictors in Step 1 and Belief in Social Determinism (BSD) as Predictor in Step 2*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 1</th>
<th>Study 2</th>
<th>Study 1</th>
<th>Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negative stereotyping</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGD</td>
<td>.36**</td>
<td>.30**</td>
<td>.27**</td>
<td>.23**</td>
<td>.09</td>
<td>.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for closure</td>
<td>.07</td>
<td>.06</td>
<td>.10</td>
<td>.09</td>
<td>.11</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implicit entity theory</td>
<td>.09</td>
<td>.13</td>
<td>.03</td>
<td>.03</td>
<td>—</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSD</td>
<td></td>
<td></td>
<td>.26**</td>
<td>.16†</td>
<td>.25**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ΔR² (%)</strong></td>
<td>16.8**</td>
<td>6.5**</td>
<td>9.6**</td>
<td>2.2†</td>
<td>2.4</td>
<td>5.8**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prejudice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGD</td>
<td>.27*</td>
<td>.22*</td>
<td>.21*</td>
<td>.19*</td>
<td>.34**</td>
<td>.30**</td>
<td>.19*</td>
<td>.14†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for closure</td>
<td>.19†</td>
<td>.13</td>
<td>.30**</td>
<td>.20*</td>
<td>.18†</td>
<td>.17†</td>
<td>.15*</td>
<td>.13†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implicit entity theory</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.06</td>
<td>.09</td>
<td>.20*</td>
<td>.20*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSD</td>
<td></td>
<td>.22*</td>
<td>.43**</td>
<td>.18†</td>
<td>.19*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ΔR² (%)</strong></td>
<td>10.8**</td>
<td>4.2†</td>
<td>14.1**</td>
<td>17.4**</td>
<td>17.4**</td>
<td>2.9†</td>
<td>13.1**</td>
<td>3.2*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discrimination</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGD</td>
<td></td>
<td></td>
<td>.33**</td>
<td>.27**</td>
<td>.19*</td>
<td>.16†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for closure</td>
<td></td>
<td></td>
<td>.06</td>
<td>.05</td>
<td>.15†</td>
<td>.13†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implicit entity theory</td>
<td></td>
<td></td>
<td>.10</td>
<td>.13</td>
<td>.16*</td>
<td>.16*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSD</td>
<td></td>
<td></td>
<td></td>
<td>.23‡</td>
<td></td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ΔR² (%)</strong></td>
<td>14.4**</td>
<td>4.8‡</td>
<td>10.9*</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Dashes indicate specific variable was not assessed in the respective study.*

a Negative stereotyping was not assessed in Studies 1 and 2.  b Prejudice was not assessed in Study 5.  c Discriminatory tendencies were not assessed in Studies 1, 2, and 5.

† p < .10.  * p < .05.  ** p < .01.
likely to satisfy a justification function concerning a negative view of outgroups, because they can provide a rationalization of the expression of prejudiced attitudes. Thus, prejudice can be considered not only as consequence but also as a cause of the acceptance of essentialist explanations: The situational activation of prejudiced attitudes should result in an increased endorsement of essentialist lay explanations in a need to justify these prejudiced attitudes. In Study 7, we therefore tested this reversed path of causality.

**Study 6: The Causal Effect of BSD on Prejudice**

Adopting the procedure used in a study by Keller (2005, Study 3), we applied a text-priming procedure to render social-deterministic lay explanations salient. On the basis of the assumption that persons tend to rely on their chronically accessible beliefs when relevant concepts are activated and applicable in a given situation (cf. Higgins, 1996), we proposed that persons with a chronically strong BSD, in particular, should display an increased ingroup bias when social-deterministic information is made salient. Thus, we predicted an interaction effect of chronic BSD and priming of social-deterministic information on ingroup bias, parallel to the findings reported by Keller (2005) documenting an interaction effect involving chronic BGD and priming of information referring to genes and DNA.

**Method**

**Participants and design.** Fifty-nine students (37 women; mean age = 23 years) at a German university participated in this study. The design of the experiment was a 2 (prime: social-deterministic vs. control) × 2 (chronic BSD: strong vs. weak) factorial, the latter representing a quasi-experimental factor.

**Procedure.** A male experimenter who was blind to priming condition (questionnaires were shuffled prior to the experimental session) welcomed participants on arrival at the laboratory and handed them a package of questionnaires. Participants were instructed that they would take part in three short and unrelated studies. The aim of the first study was described as validation of newly developed scales. The questionnaire of this study included a short version of the BSD scale embedded in other unrelated standard personality and attitude measures. The second study was described as investigating reading comprehension. Participants were asked to read a short scientific text and to rate it with respect to readability and language style. Participants in the priming group read an article that highlighted the importance of social influences (e.g., social background and socialization) on development of behavioral tendencies and personality, whereas participants in the control group received a neutral text that did not contain any reference to social influence on behavior or personality. Afterwards, participants were asked to fill out several questions concerning content and style of the article. In the alleged third study, participants were informed that a research group at a different German university was currently conducting an opinion poll that was part of a large study in many European countries on attitudes concerning the European integration and the enlargement of the European Union to the east. As part of this opinion poll, likeability ratings toward citizens of Eastern and Western European countries were assessed as the critical measures of ingroup and outgroup likeability in this study. Additionally, participants completed a short version of the BGD scale with four items in this section of the questionnaire. After completing this third study, participants were fully debriefed, thanked, and given €3 for their participation.

**Assessment of chronic BSD.** The questionnaire of the alleged first study included a short version of the BSD scale with four items (Items 1, 2, 3, and 8 of Table 2). This short version showed good reliability (Cronbach’s α = .76). It was chosen to use an abbreviated form of the BSD scale in order to render the experiment’s cover story (i.e., the independency of the various parts of the questionnaire) plausible for participants in the priming condition, who received a text containing social-deterministic information afterwards. After answering the four BSD items, participants again completed an unrelated filler questionnaire consisting of standard personality and attitude measures for approximately 10 min to increase temporal distance between assessment of chronic social-deterministic beliefs and assessment of the crucial dependent variable.

**Priming procedure.** The procedure to activate knowledge related to BSD was based on the text priming procedure used by Chiu et al. (1997) and Keller (2005). A short article was written and presented to participants as a research article from a popular scientific online magazine. This article contained information about several fictitious research programs, providing evidence for the important role of diverse social influences on development of abilities and personality. For example, participants read that recent research conducted by an international research group indicated that characteristics of the social environment during childhood and adolescence (e.g., familial social status) have a major impact on nearly all personality traits of an individual. Participants in the control group read a different text of comparable length on the discovery of an ancient Egyptian seaport by a group of archaeologists.

**Dependent variables.** As part of the questionnaire introduced as an opinion poll about the European integration process, participants were asked to indicate their feelings toward citizens of several Eastern European (Bulgaria, Poland, Romania, Russia, Turkey) and Western European (France, Germany, Italy, the Netherlands, Switzerland) countries, using 9-point scales ranging from not at all likeable to very likeable. From these ratings, separate composite measures of ingroup and outgroup likeability were obtained by averaging the ratings of Western European citizens (α = .72) and Eastern European citizens (α = .84), respectively.

**Assessment of chronic BGD.** To rule out the possibility that any effects of the experimental manipulation on ingroup and outgroup ratings are driven by BGD rather than BSD because of shared variance of both lay theories, we assessed a short version of BGD including four items (Items 4, 8, 10, and 13 from Keller, 2005, Table 1; α = .75).

**Results and Discussion**

To examine the proposed moderation hypothesis, we conducted a mixed repeated measures analysis with ingroup versus outgroup ratings as within-subject factor, priming condition as between-subjects factor, and chronic BSD as continuous predictor. Apart from a significant main effect of the within-subject factor indicating that the ingroup was generally rated more positively than the outgroup (M<sub>Ingroup</sub> = 6.10, M<sub>Outgroup</sub> = 5.15), F(1, 55) = 25.56,
p < .001, results revealed the predicted significant three-way interaction involving type of group, BSD, and the experimental factor, $F(1, 55) = 6.73, p < .05$. Importantly, this result remained robust when BGD was controlled for, (three-way interaction) $F(1, 51) = 4.85, p < .05$, ruling out the possibility that obtained results were essentially driven by common variance of BGD and BSD. The results indicate that BSD had a significant influence on in-versus outgroup ratings in the experimental condition where social-deterministic information was salient, $F(1, 27) = 6.20, p < .05$, whereas this interaction disappeared in the control condition, $F(1, 28) = 1.32, p > .10$.

To further examine the obtained interaction, we conducted separate regression analyses, entering ingroup or outgroup ratings as dependent variable predicted by BSD scores, priming condition, and the interaction term. Following suggestions by Aiken and West (1991), we centered BSD scores (i.e., the mean was set to zero) and effect-coded the priming manipulation (social-deterministic prime = 1; control-group = −1).

Results of these analyses indicated a significant interaction effect involving the priming factor and BSD on ingroup ratings ($\beta = .31, p < .05$). Simple slopes analyses within conditions revealed that BSD was strongly positively related to ingroup ratings in the condition with social-deterministic priming ($\beta = .47, p < .01$), whereas BSD and ingroup ratings were unrelated in the control condition ($\beta = -.16, p > .10$). Thus, when social-deterministic information was salient, the more individuals habitually endorsed BSD, the more they rated ingroup members in a favorable way (see Figure 2).7 Results of analyses including outgroup ratings as dependent variable revealed no significant effects of priming and BSD. The fact that the (favorable) evaluation of the ingroup was most relevant in the present study is well in line with previous findings documenting that prejudice is frequently expressed via ingroup favoritism rather than outgroup derogation (cf. Brewer, 1999, 2001; Hewstone, Rubin, & Willis, 2002).

The results of Study 6 support the notion that ingroup favoritism can be regarded a consequence of BSD. We did not find evidence of direct outgroup derogation in this study. However, as previous work revealed, ingroup favoritism essentially builds the basis of intergroup bias (e.g., Brewer, 1999, 2001; Hewstone et al., 2002). Specifically, it has been argued that ingroup favoritism rather than direct outgroup derogation constitutes the basis of modern “subtle racism” in the United States and Europe (cf. Brewer, 2001). The findings of our experimental study thus are in line with previous theorizing and research and support the assumption that BSD plays a causal role with regard to intergroup bias.

**Study 7: The Causal Effect of Prejudice on BSD**

The results of Study 6 indicate that prejudice can be a consequence of BSD and thus again speak to the fact that BSD can be considered as an essentialist lay theory. However, we reasoned above that the reversed causal path—that essentialist beliefs are endorsed as a reaction to the activation of prejudiced attitudes—seems also plausible (cf. Crandall & Eshleman, 2003). If essentialist explanations function as justifications for the expression of prejudice, a situational activation of prejudiced attitudes should lead to a heightened endorsement of social-deterministic beliefs. However, this activation of justifying essentialist explanations in a prejudice-relevant situation should also be dependent on a person’s chronic endorsement of prejudice following the logic outlined by Crandall and Eshleman (2003), who argued that especially those persons endorsing a high level of genuine prejudice should be prone to search for justifiers allowing the unsanctioned expression of prejudiced attitudes. Thus, in Study 7, we investigated whether the activation of prejudiced attitudes can result in a heightened endorsement of social-deterministic beliefs and whether this heightened acceptance of essentialist theories in a prejudice-relevant situation is dependent on individuals’ chronic endorsement of prejudice. Supporting evidence for this (reversed) causal path would indicate that the relationship between essentialist lay theories and prejudice can be considered as bidirectional. The bidirectionality of causal links between two interrelated concepts has recently been analyzed in different domains (e.g., Mazur & Booth, 1998; Müssweiler, 2006; Smith, Wibboldus, & Dijksterhuis, 2008), and it has been argued that cases of reciprocal causality point to a close connection between both concepts in a potentially self-reinforcing circle (cf. Smith et al., 2008). Most relevant to the present discussion is a recent study by Newheiser, Tausch, Dovidio, and Hewstone (2009) on perceived group entitativity, that is, the degree to which groups are perceived as a coherent entity, a construct that has been related to essentialist group perception (e.g., Haslam et al., 2000). Whereas prior research conceptualizes perceived entitativity as an important predictor of prejudiced attitudes, Newheiser et al. showed that prejudice in turn also predicts perceived group entitativity. Interestingly, these authors argued that this reversed causal effect is driven by the motivation of prejudiced individuals to see outgroups as being entitative—a reasoning that parallels our theoretical arguments.

In Study 7, we investigated this idea by experimentally activating prejudiced attitudes. We hypothesized that the relationship between an individual’s chronic level of prejudice and acceptance of social-deterministic beliefs is particularly strong when prejudiced attitudes have been activated, because individuals with a

\[7\] Additional analyses of the social-deterministic priming effect at one standard deviation above and below the BSD mean revealed that a significant priming effect could be observed at one standard deviation above the BSD mean ($\beta = .45, t = 2.52, p < .05$). This effect disappeared at one standard deviation below the mean ($\beta = -.18, t = -1.01, p > .32$; see Figure 2).
high level of genuine (i.e., chronic) prejudice should be especially likely to endorse justifying essentialist explanations when prejudiced attitudes are activated (i.e., salient) in the situation.

Method

Participants and design. Sixty-four students (32 women; mean age = 22 years) took part in the study. One experimental factor, activation versus no activation of prejudice, was manipulated; additionally, chronic prejudice (low vs. high) was assessed and served as quasi-experimental factor.

Procedure. Participants were welcomed by a female experimenter who was blind to experimental conditions (as in Study 6, questionnaires were shuffled before the experimental session) and randomly received one of two versions of a questionnaire package. Again, participants were informed that they would take part in two unrelated studies. The ostensible aim of the first study was to investigate “intuitive decision making in everyday situations.” Actually, this part of the questionnaire contained the materials to activate prejudiced attitudes. Specifically, participants were asked to choose the one of three given explanations for different described situations, which appeared most plausible to them. For participants in the experimental condition, the described situations all concerned negative stereotypes about Turkish immigrants in Germany. In contrast, the control group was asked to choose one of three explanations for neutral facts about Turkey and Turkish persons without reference to stereotypes and prejudice.

Instructions of the alleged second study informed participants that the objective was to validate newly developed scales for social scientific research. This part of the questionnaire contained the BSD scale. After completing filler items for a couple of minutes (which were included to circumvent potential effects of the manipulation on the measure of chronic prejudice; no effect emerged, \( t < 1 \)), the Pettigrew and Meertens (1995) scale was assessed to measure chronic prejudice against Turkish immigrants in Germany.

Upon the completion of this second study, participants were thoroughly debriefed, thanked, and rewarded with €2 for their participation.

Activation of prejudice. To activate prejudiced attitudes, participants were told that they would be asked to judge the plausibility of different explanations for everyday events and that they should answer quickly and spontaneously. Five situations were described. For each described situation, participants were provided with three potential explanations and were asked to choose the one explanation that seemed most plausible to them. Participants in the experimental condition received five described situations that concerned Turkish immigrants in Germany. Likewise, all explanations participants had to choose from concerned negative stereotypic evaluations of Turkish immigrants. For example, one situation described a Turkish immigrant who had lost his job. The explanations stated that Turkish immigrants (a) have a different kind of working morale and lower punctuality, (b) often have problems with German language and thus are not able to communicate with colleagues and superiors, and (c) typically have a lower level of education and thus are more frequently hit by unemployment (for a similar procedure to activate prejudiced attitudes, see Moskowitz, Gollwitzer, Wasel, & Schaal, 1999).

In contrast, participants in the control group received five descriptions with prejudice-unrelated, neutral content. Importantly, all five control descriptions referred to facts about Turkey and Turkish people (e.g., numbers of immigrants in Turkey and of Turkish immigrants in Germany in 2008). This procedure was designed to keep the salience of the relevant outgroup category constant while manipulating the activation of prejudice.

Chronic prejudice. Chronic prejudice against Turkish immigrants in Germany was measured with the Pettigrew and Meertens (1995) scale. As in the correlational studies, a composite score reflecting general prejudice was computed (Cronbach’s \( \alpha = .89 \)).

Dependent variable. As dependent variable, BSD was assessed with the BSD scale (Cronbach’s \( \alpha = .84 \)). To control for effects of common variance of BGD and BSD in the results, the questionnaire additionally contained the BGD scale.

Results and Discussion

To test our hypothesis that the relationship between chronic endorsement of prejudice and social-deterministic beliefs is particularly strong when prejudiced attitudes have been experimentally activated, we conducted regression analyses with BSD scores as dependent variable and chronic prejudice, experimental activation of prejudice, and the interaction term as predictors. Prejudice scores and experimental condition (i.e., prejudice activated = 1, control = −1) were centered prior to the analyses, following the recommendations of Aiken and West (1991). As predicted, a significant interaction term indicated that experimental activation of prejudiced attitudes led to heightened endorsement of BSD for participants with high levels of chronic prejudice (β = .26, \( p < .05 \)). Additionally, a marginally significant main effect of chronic prejudice emerged (β = .24, \( p < .06 \)), whereas no main effect of experimental condition emerged (β = −.08, ns). Simple slopes analyses within experimental conditions indicated, as hypothesized, that general prejudice was strongly positively related to social-deterministic beliefs in the experimental condition where prejudiced attitudes had been activated (β = .46, \( p < .01 \)), whereas chronic prejudice was unrelated to BSD in the control condition (β = −.03, ns). The fact that BSD showed no meaningful relation to chronic prejudice in the control group (whereas we found significant relations in the correlational studies reported above) may reflect the fact that participants in the control group were confronted with neutral (i.e., nonstereotypic) information regarding the relevant group. The presentation of this neutral information is likely to reduce the salience and accessibility of prejudiced thoughts reflecting a dilution effect. That is, the present control group conditions do not mirror the conditions given in our

\[ \text{As in Study 6, results remained robust when BGD was controlled for in regression analyses. Thus, obtained effects are not attributable to shared variance of BSD with BGD.} \]

\[ \text{An additional simple slope analysis of the effect of prejudice priming at high and low levels of general prejudice (one standard deviation above and below mean level of general prejudice) revealed that persons endorsing low prejudice showed significantly lower endorsement of BSD after prejudice priming (compared with control; } \beta = -.35, \ t = -2.06, \ p < .05 \text{) and that persons endorsing high general prejudice tended to show higher endorsement of BSD after prejudice priming in comparison to the control group, although this effect was only weak (} \beta = .18, \ t = 1.08, \ p < .29 \text{).} \]

questionnaire studies. Note that the crucial point in this experiment is that we find a strong relation between chronic prejudice and BSD when prejudice had been activated (and this relation is substantially stronger than those observed in the correlational studies), whereas this relation did not emerge when the salience and accessibility of prejudiced thoughts was low (and most probably reduced compared with conditions in our correlational studies).

In sum, Study 7 supports our notion that endorsement of social-deterministic beliefs can be triggered by the situational activation of prejudiced attitudes: The more individuals chronically endorsed prejudice against Turkish immigrants, the more they endorsed social-deterministic beliefs when prejudice was activated in the situation. This indicates that individuals with a high level of chronic prejudice show a strong tendency to endorse BSD—which can be helpful to explain the low social status or negative stereotypic attributes of the relevant derogated social group—particularly under circumstances where a justification of prejudiced attitudes seems necessary (i.e., when prejudiced attitudes are salient in the situation). Together, the findings of Study 6 and 7 show that the relationship between prejudice and the endorsement of essentialist explanations (in this case, BSD) should be regarded as bidirectional.

**General Discussion**

The basic assumption underlying the present investigation holds that psychological essentialism—the general tendency to refer to an underlying essence when explaining what makes people who they are—does not necessarily take the form of genetic determinism. This notion, though previously expressed by some authors in the field (Gelman & Hirschfeld, 1999; Yzerbyt et al., 2004, 1997), has never been tested explicitly to date. We proposed BSD as a hitherto neglected component of essentialism and defined this lay theory as the conviction that a person’s essential character is shaped by social factors (e.g., upbringing, social background). In five correlational studies and two experiments, we gathered evidence supporting the notion that (a) BSD can indeed be conceived as an integral component of essentialism; (b) BSD constitutes an important and widespread lay theoretical construct associated with vital consequences such as stereotyping, prejudice, and ingroup favoritism; and (c) endorsement of BSD is associated with the satisfaction of basic sociocognitive needs. The obtained results consistently substantiated these central notions.

As predicted, BSD was—indeed, independently from BGD-related to constructs that can be conceived as close correlates of essentialist thinking, such as dispositional thinking, inductive potential of essentialist person information, and perceived homogeneity of social groups. In keeping with our predictions, we also found that BGD and BSD were not negatively related but constituted two largely independent dimensions. At first glance, this finding seems counterintuitive, because social and genetic influences on a person’s characteristics and behaviors are often conceived as opposites (e.g., as in the common expression “nature versus nurture”). However, BSD as conceptualized in the present work implies the conviction that a person’s essential character is determined lastingly by social influences. Accordingly, both BSD and BGD represent inside stories (Markus, 2004; Plaut & Markus, 2005) in that they attribute personal features to factors rooted inside the person. Note that we do not suggest that BSD and BGD should have parallel effects or are equally relevant in every situational context. On the contrary, the differential associations of BSD and BGD with the perceived homogeneity of social versus genetic groups and the inductive potential of social versus genetic person information in our studies imply that, depending on the situational context (e.g., the type of group in focus), one essentialist lay theory might be more relevant and more frequently referred to than the other. The claim we make is that BSD and BGD are not by definition oppositional and that they are complementary in the sense that both essentialist lay theories basically fulfill the same social-cognitive needs and are associated with parallel consequences—which is supported by the data that we obtained in the studies reported above.

To explore the notion that BSD constitutes an important lay theoretical construct, we investigated the relations of BSD to significant negative consequences: stereotyping, prejudice, and discriminatory tendencies. Consistently, we found that BSD contributed to the prediction of these negative consequences over and above BGD, as well as other psychological constructs representing established predictors of stereotyping and prejudice (need for cognitive closure, implicit entity theory). Thus, both lay theories, BGD and BSD, had additive effects in explaining variance in the negative consequences. Furthermore, the results from two experimental studies (Studies 6 and 7) support the notion that the causal relationship between BSD and prejudice is bidirectional in nature. In addition, Study 7 supports the notion that essentialist beliefs (in the present case, social-deterministic lay explanations) are endorsed in part because they serve a justification function. Although different authors have suggested a link between essentialism and the satisfaction of this basic sociocognitive motive (e.g., Jayaratne et al., 2006; Keller, 2005; Yzerbyt et al., 2004a, 1997), experimental tests of this notion are scarce. Our results thus support this view of essentialist explanations as a case of motivated social cognition. Importantly, the experimental findings observed in the concluding two studies strongly support the causal nature of the relation between BSD and ingroup favoritism and prejudice. Specifically, the findings document a reciprocal relation between the constructs and thus indicate a self-reinforcing circle.

Besides being uniquely linked with vital consequences and the satisfaction of basic motives, two additional points lead us to conclude that BSD constitutes an important lay theoretical construct. First, in our samples, BSD proved to be a rather widespread lay theory. Second, the relations between BSD and diverse indicators of basic sociocognitive ideological and epistemic motives were as strong as the relations with the BGD scale; in fact, BSD showed stronger relations to hierarchy-enhancing ideologies such as patriotism and social dominance orientation. It thus appears that the main focus on identity-determining features of the social environment makes BSD particularly relevant for ideological motives.

Overall, we think that the introduction of the concept of BSD contributes in significant ways to present theorizing and research on essentialism. First and foremost, this investigation suggests that the previous focus on biological lay theories in theorizing and research on essentialism can be considered partially misleading. Although some authors (Gelman & Hirschfeld, 1999; Yzerbyt et al., 2004, 1997) have pointed out that essentialism should not be equated with genetic determinism, the idea that lay explanations
other than genetic-deterministic beliefs may underlie an essentialist group perception has so far been completely neglected in research on essentialism. Rather, it has been more or less implicitly assumed that an essentialist perception of groups and persons is based exclusively on the belief in a genetic basis of personal features. In contrast, lay explanations of the origin of person characteristics that refer to the social environment (e.g., culture, socialization, upbringing) were commonly conceived as contradicting the essentialist perception of groups as stable and lasting entities (e.g., Furnham et al., 1985). Going even further, past work on the genetic component of essentialism has often maintained that social instead of genetic explanations for person features should be highlighted in order to counteract essentialist theorizing (e.g., Jackman, 1994; Nelkin & Lindee, 2004; Tobach & Rosoff, 1994). As our results indicate, this advice might be counterproductive and uncalled for.

One specific factor that might have contributed to the conclusion that social-deterministic explanations are antithetical to essentialist explanations is the confounding of two distinct and possibly conflicting lay theoretical concepts in past research that assessed (or manipulated) individuals’ beliefs in the impact of the social context on a person’s characteristics or behavioral tendencies (e.g., Daminbrun et al., 2009; Dar-Nimrod & Heine, 2006; Jayaratne et al., 2009). These studies have often mixed the antiessentialist lay belief that factors of the immediate situation have an influence on individuals’ behavioral tendencies and the essentialist social-deterministic belief that a person’s nature is shaped lastingly by social factors. To the best of our knowledge, the present research is the first investigation that provides a clear conceptualization of this latter essentialist version of lay belief that refers to the impact of the social environment and provides empirical evidence based on a reliable and valid measure for assessing the essentialist BSD.

This broadening of the concept of essentialism might contribute to future research in various ways. First, several studies suggest that a belief in an underlying, identity-determining essence can have consequences not only with respect to the perception of social groups but also with respect to self-perceptional and behavioral implications. For example, Dar-Nimrod and Heine (2006) showed that exposure to a genetic account for gender differences implied an impairment of women’s math performance following a stereotype threat manipulation, whereas exposure to a contextual explanation did not. In a similar vein, Aronson, Fried, and Good (2002) found that stereotype threat affected African American students’ performance only when a view of intelligence as fixed trait was made salient but not when intelligence was presented as malleable. These studies suggest that endorsement of an essentialist BSD that highlights a socially shaped identity-determining essence should result in similar negative behavioral and self-perceptional effects. In contrast, an antiessentialist lay belief that recognizes the influence of the immediate social situation on a person and thus highlights the flexibility and malleability of personal characteristics and behaviors should buffer stereotype threat effects.

Second, the introduction of BSD in addition to BGD allowed us to derive specific predictions concerning the relations of these lay theories to core characteristics of essentialism (i.e., perceived group homogeneity, inductive potential of person information). Thus, social-deterministic and genetic-deterministic beliefs are considered differentially relevant, depending on the kind of social group at stake or the type of person information available in a given context. For instance, in the above-mentioned study by Yzerbyt et al. (2001), providing participants with a genetic category label led to a strong illusory correlation effect. Our results suggest that a social feature as category label (e.g., occupation or social status) should elicit a particularly strong illusory correlation effect for individuals endorsing a strong BSD. Thus, both lay theories could contribute uniquely to the emergence of stereotypes based on illusory correlation effects.

Concerning practical implications of the present work, there is reason to suggest that BSD is at least as relevant as essentialist perceptions built on genetic determinism. Whereas any reference to genetic determinism is an extremely controversial topic in the public (e.g., the media discussion of the book Bell Curve by Herrnstein and Murray, 1994, a few years ago), acceptance of social explanations is generally not considered problematic—which, as our research demonstrates, might be a fallacy. Thus, although BSD is widely accepted and is associated with important negative consequences (stereotyping, prejudice, discriminatory tendencies), the problematic nature of this lay theory is not commonly understood. Additionally, BSD was more closely related to specific indicators of an ideological motivation—such as social dominance orientation and hierarchy-enhancing ideologies—than BGD. As mentioned above, this might be due to the relevance of features of the social environment implied by this lay theory (i.e., the salience and perceived relevance of social background and social status hierarchies). It thus seems like BSD is particularly relevant when ideological motives are activated—a notion that should be tested in future research.

**Future Directions**

The main focus of the present work was to demonstrate that BSD is associated with the same basic sociocognitive motives and important consequences of essentialist lay theories that have been connected to BGD in prior research. This supports the conclusion that BSD complements the genetic component of essentialism. However, the pattern of results also revealed two interesting differences between BGD and BSD, which might be helpful to identify potentially distinctive features of both lay beliefs.

First, we found that only BGD was positively related to implicit entity theory (Dweck, 1999), whereas BSD did not show significant relations to this concept. On the other hand, the results found with this particular scale contrast with the finding that social-deterministic beliefs were positively associated with lay dispositional thinking and thus with a tendency to infer cross-situationally and temporally stable dispositions. Thus, before any strong conclusion is drawn regarding the relationship of BSD with the belief that personality is unchangeable, additional data should be obtained with other scales measuring the belief in stability. In combination, it seems that BSD implies a tendency to see personality as fixed and stable across situations and time (reflecting lay dispositionist thinking), but we can also notice that BSD can be endorsed by individuals who acknowledge the fact that personality can be modified (at least to some extent, as assessed with the Kind of Person Scale; Dweck, 1999). Given that BSD reflects the conviction that personality has been formed and shaped by social forces, it appears not too surprising to find that some of the individuals who endorse this latter conviction consider personality...
to be malleable (at least to some extent). More importantly, our results imply that a belief in the stability of personality features—at least as measured by Dweck’s (1999) scale—is indeed not a crucial factor when it comes to the associations of both lay theories and constructs conceptualized as consequences of essentialist thinking. The relationships of BSD and BGD with stereotyping, prejudice, and discriminatory tendencies remained significant even when implicit entity theory was controlled for. In line with other recent research (Bastian & Haslam, 2006, 2007), our work thus indicates that essentialist thinking cannot be reduced to stability beliefs. We suppose that belief in stability—at least as assessed with the King of Person Scale (Dweck, 1999)—can reflect quite heterogeneous sets of beliefs (e.g., even individuals endorsing a belief in the power of the immediate context may realize that contexts are quite stable and accordingly endorse a belief in stability).

Second, whereas both BSD and BGD were similarly related to most indicators of epistemic motives, the two lay beliefs showed differential associations with need for cognition (Cacioppo & Petty, 1982). The negative correlations of BGD with need for cognition might be interpreted as suggestive evidence that the theoretically somewhat less complex lay theory (as noted above, BGD can be described as a unicausal lay theory, whereas BSD reflects a multicausal and hence somewhat more complex lay theory) is more attractive to persons low in need for cognition who prefer simplicity over complexity. These as well as other potential differences between both lay theories should be a focus of future research. However, the possible differences should not be overestimated. In terms of quantity, the present studies revealed far more parallel than differential relations for both lay theories, and indeed, this is what we had expected, because both BSD and BGD are conceptualized as essentialist inside stories and as such should serve the same functions and entail the same consequences.

The focus of the current work on essentialist lay theories extends previous research on psychological essentialism in another interesting way. The term psychological essentialism has originally been introduced within the framework of categorization theory (Medin, 1989), and accordingly, most research has linked psychological essentialism to processes of group perception. Interestingly, however, some authors have argued that essentialist beliefs might also be relevant within the realm of person perception (cf. Gelman, 2003; Haslam, Bastian, & Bissett, 2004). Furthermore, some empirical work seems to indicate that individuals rely on parallel essentialist beliefs in group and person perception. For example, Haslam et al. (2004) used an adoption of Haslam et al.’s (2000, 2002) essentialist group perception measure incorporating the same components of essentialist beliefs to assess individual-based judgments about the essentialist nature of personality traits. Our assessment of essentialist lay theories parallels this reasoning in that most items of the BSD and BGD scale refer to the belief that a person’s features are shaped by social or genetic influences and thus do not incorporate direct group-based judgments. Most noteworthy, we found that BSD and BGD predict judgments more closely linked to an essentialist perception of individuals (e.g., lay dispositionism, inductive potential of person information), but also predict important group-relevant outcomes typically associated with essentialist group perception (e.g., perceived group homogeneity, stereotyping, prejudice). That is, our measures reflecting a focus on the individual level emerged as significant predictors of group-based outcomes. This indicates that there is a psychological translation from individual-level judgments to group-level judgments. It is an interesting question whether the distinction between individual-level and group-based essentialist thought is crucial. We acknowledge the fact that this is an important theoretical point that needs to be addressed in the ongoing elaboration on the nature of essentialist thinking.

Another endeavor for future research concerns the conceptualization of the opposite pole of essentialist lay beliefs, as our results show that BSD obviously does not constitute this opposite pole. Although the widespread acceptance of both genetic and social-deterministic explanations in our studies again supports the notion that psychological essentialism can be considered a general tendency in social thinking, clearly individuals will avoid essentialist explanations in some situations (e.g., if processing motivation and capacity are sufficiently high or if ideological and epistemic needs are not salient in a given context). Likewise, our results suggest that some individuals will be less likely than others to endorse essentialist explanations: A chronically high endorsement of openness-mindedness (e.g., low need for closure, high openness to experience) and a low acceptance of ideological beliefs (e.g., low social dominance orientation) should predict a stronger propensity for nonessentialist explanations. But what kind of lay explanations can be considered antithetical to essentialist beliefs? We think there might be different answers to this question. First, individuals could endorse a truly antinessentialist view that denies the existence of stable dispositions and essential person features altogether and instead implies a belief that factors of the immediate situation determine the actions of a person. This lay belief would effectively constitute a contextualist outside story and imply rejection of both BSD and BGD as inside stories. Second, individuals could endorse an interactionist view that emphasizes the complex interplay of social and genetic factors in the ontogenetic development of a person—effectively, this belief then would constitute the lay theoretical equivalent to the social scientific doctrine. It might be that endorsement of this interactionist lay belief is not associated with a complete rejection of BSD and BGD but rather implies a modest acceptance of both BGD and BSD. Additionally, however, this interactionist view emphasizes dynamic and flexible interactions between both sources of influence on a person’s development and, in contrast to both essentialist lay theories, denies the stable and enduring impact of one specific influence factor. Future research should clarify to what extent and under which conditions persons endorse these nonessentialist explanations.

The current article focused on BGD and BSD as two complementary dimensions of psychological essentialism. However, it seems plausible that other lay theories can build the basis of essentialist thinking as well. Mahalingam (2003), for example, proposed a metaphysical form of essentialism as a cause for the stability of the Indian caste system. This lay belief in metaphysical determinism implies the conviction that essential characteristics of a person are shaped by supernatural forces (spirit, God, fate, etc.). A worthwhile issue for future studies would be to investigate to what extent individuals endorse metaphysical-deterministic explanations and to explore potential commonalities and differences of both BGD and BSD regarding this metaphysical form of essentialism.
Conclusion

Essentialism comes in different forms. Some of these forms—associated with a genetic-deterministic lay theory—might be more obvious at first glance than others. However, in our studies both BGD and BSD proved to be equally problematic in that they imply negative consequences, such as stereotyping, prejudice, and discriminatory tendencies. Essentialist lay explanations, whether based on genetic or social determinism, widen the perceived gaps between different social groups (cf. Prentice & Miller, 2007; Yzerbyt et al., 1997), can serve as justification for the maltreatment and derogation of outgroup members, and can thus lead to the most severe forms of group conflict (cf. Yzerbyt et al., 2004a). Because essentialism can also be based on a lay theory of social determinism, it does not seem appropriate to fight essentialist thinking by replacing one deterministic lay theory (genetic or biological determinism) with another one (social determinism). Rather, in order to counteract psychological essentialism and its negative consequences, one should follow the advice of Markus (Markus, 2004; Plaut & Markus, 2005). That is, one should question the validity of any kind of deterministic inside story and instead heighten public attention to the classic social-psychological model, which highlights the power of the immediate, imminent situation on individuals and emphasizes the flexibility and malleability of a person’s characteristics and behaviors.

References


Received January 21, 2010
Revision received October 13, 2010
Accepted November 11, 2010.