

**The Signature Effect:
How Signing One's Name Influences Consumption-Related Behavior**

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Abstract

Evidence from four studies shows that signing one's name influences consumption-related behavior in a predictable manner. Signing acts as a general self-identity prime that facilitates the activation of the particular aspect signing causes consumers to become more (less) engaged when shopping in a product domain they (do not) closely identify with (studies 1 and 2), to identify more (less) closely with in(out)-groups (study 3), and to conform more with (diverge more from) in(out)-groups when making consumption choices in preference domains that are relevant to signaling one's identity (study 4). We discuss the theoretical and practical implications of these findings.

Your handwritten signature plays an important role in your life. As a consumer, you often sign your name on documents to authorize, initiate, or complete transactions (e.g., credit card purchases). Moreover, by signing particular documents, you can commit yourself to years of marriage, mortgage payments, or military service. In this article, we examine the possibility that the mere act of signing your name might influence your consumption-related behavior, such as how much time you spend in a retail store or what you buy there. We introduce and test a theoretical account of how signing affects subsequent behavior.

We propose that signing one's name acts as a general self-identity prime. Here, the term *self-identity* refers to the totality of all selves, identities, and schemas that form one's sense of self (Markus 1977). Building on the theory of affordances (Gibson 1977; Greeno 1994), we hypothesize that the general priming of one's self-identity (as a result of producing one's signature) makes it more likely that situational affordances activate the relevant *aspect* of one's self-identity, and that this in turn leads to behavior that is congruent with the activated aspect.

Evidence from four studies demonstrates this phenomenon in consumption-related domains. Signing their name – as opposed to printing it – in an ostensibly unrelated task induces consumers to become more (less) engaged when shopping in a product domain they (do not) closely identify with (studies 1 and 2), leads people to identify more closely with in-groups and less closely with out-groups (study 3), and causes consumers to conform more with in-groups and diverge more from out-groups when making consumption choices in preference domains that are relevant to signaling one's identity (study 4). These findings have important marketplace implications. For instance, a retailer might predictably influence the shopping behavior of its customers by eliciting their signatures.

Signatures and Identity

A basic premise that underlies our theorizing is that individuals strongly associate their signature with their identity. Although there are numerous ways in which people may present their identity to others, signing one's name has distinct legal, social, and economic implications (Fraenkel 1992; Harris 2000). Individuals must often sign their name in situations where printing it would not be sufficient, such as when they authorize actions (e.g., the purchase or sale of financial instruments), indicate their understanding of a document (e.g., a consent form), or commit to the terms of a contract (Kam, Gummadidala, Fielding, and Conn 2001; Knapp, Crystal, and Prince 2003; Mann 2004; McCabe, Trevino, and Butterfield 1996; Mnookin 2001; Parizeau and Plamondon 1989).

Some of society's most important documents – including judges' rulings (LaFave and Remington 1964), corporate tax returns (Weinberg 2003), government legislation (Jackson and Roosevelt 1953), and contracts (Knapp et al. 2003) – require signatures to be official. As a result, handwritten signatures are often used as evidence of one's actions and obligations in courts of law (Mnookin 2001; Risinger, Denbeaux, and Saks 1989; Weinberg 2003), and it is illegal to forge another person's signature (Lemert 1958). By contrast, printing one's name on a document does not imbue the same meaning, nor is it illegal to print another person's name. Moreover, prior research suggests that the legal significance of signatures is widely understood and that forging someone else's signature causes physiological responses that reflect the experience of guilt (Lubow and Fein 1996).

The act of signing one's name is a highly expressive behavior (Harvey 1934; Warner and Sugarman 1986; Zweigenhaft and Marlowe 1973) – people tend to craft a signature that is clearly distinguishable from others' signatures and thus difficult to forge (Bensefia, Paquet, and

Heutte 2005; Kam et al. 2001). Consistent with our premise that individuals strongly associate their signature with their self-identity, people believe that the unique manner in which they sign their name reflects their personality and character traits (Briggs 1980; Hughes, Keeling, and Tuck 1983; King and Koehler 2000; Rafaeli and Klimoski 1983). Moreover, research indicates that the size of one's signature can be influenced by particular aspects of one's self-identity. In particular, signatures tend to be larger for people with greater need-for-uniqueness (Snyder and Fromkin 1977), with more dominant personalities (Jorgenson 1977), and of higher social status (Aiken and Zweigenhaft 1978), and in situations in which one's self-esteem is higher (Rudman, Dohn, and Fairchild 2007; Stapel and Blanton 2004; Zweigenhaft 1977).

Research in several domains has examined how signing a particular document – such as a contract or honor code – influences behavior as it pertains to the signed document. For instance, students who were required to sign a university's honor code subsequently acted more honestly (Mazar, Amir, and Ariely 2008; McCabe and Trevino 1993, 1997; McCabe et al. 1996), and requiring people to sign a contract (about a specific target behavior) has been shown to increase their conformity to the contract terms in behavioral domains ranging from weight loss to seat belt use (Anker and Crowley 1981; Rogers, Rogers, Bailey, Runkle, and Moore 1988; Staw 1974; Stevens, Olson, Gaffney, Tosteson, Mott, and Starr 2002; Ureda 1980; Williams, Bezner, Chesbro, and Leavitt 2005). Notably, in these studies (with the exception of Anker and Crowley 1981 and Staw 1974), behavior was influenced even though violating the contract or honor code was legally and economically inconsequential. This highlights the important meaning associated with signing one's name on a document and, thus, supports the premise of a strong relationship between signatures and identity.

In sum, prior work in several fields supports our premise that people strongly associate their signature with their identity. We now turn to developing the proposition that signing one's name acts as a general self-identity prime, and to outlining how we envision this to predictably influence consumption-related behavior.

Self-Identity, Priming, and Behavior

Each of us has a sense of who we are. We perceive ourselves as having (or lacking) certain physical attributes, character traits, and abilities, and we believe that we belong to certain social groups (and don't belong to others). Several different terms have been used in the literature to describe this overall sense of self, including "self-identity", "identity", "self", and "self-concept" (e.g., Belk 1988; Ellemers, Spears, and Doosje 2002; Gecas and Burke 1995; Howard 2000; James 1890; Lewicki 1984; Markus and Kunda 1986; Markus and Wurf 1987; Roberts and Donahue 1994; Rochberg-Halton 1984; Segal 1988; Thoits 1983). We use the term *self-identity* to refer to all of the selves, identities (including social identities), and self-schemas that comprise people's sense of who they are. As an illustration of this conceptualization, figure 1 represents our fictional character Amanda's (partial) self-identity, which includes multiple aspects – her gender identity, her social identities, and her identities as a runner and a photographer – as well as the schemas associated with each of these aspects.

 Insert figure 1 about here

Prior research has shown that aspects of one's self-identity can be differentially activated, and that the activation of a particular aspect makes it more likely that one's subsequent responses are congruent with that aspect (Berger and Heath 2007; DeMaree, Wheeler, and Petty 2005; Forehand, Reed, and Deshpandé 2001; Reed 2004; Sela and Shiv 2009; Wheeler and Petty

2001). For example, priming consumers' ethnicity leads them to respond more favorably to same-ethnicity spokespeople (Forehand and Deshpandé 2001), and priming a relevant out-group leads people to diverge from that group's behavioral norms (Spears, Gordijn, Dijksterhuis, and Stapel 2004). Although the nature of prime-to-behavior effects is well-established for contexts in which a specific identity (e.g., gender) or schema (e.g., hostility) is primed, little is known about how a general self-identity prime – such as signing one's name – might influence behavior.

In order for a prime to affect a person's behavior, the situation s/he is in must provide an *affordance* – i.e., a precondition for activity that is available to an individual's perceptual systems – that is associated with the primed construct (Dijksterhuis and Bargh 2001; Gibson 1977; Greeno 1994; Guinote 2008; Oyserman 2009). Affordances thus serve as cues in the environment that can guide judgments and behavior (Cesario, Plaks, Hagiwara, Navarrete, and Higgins 2010; Greeno 1994; Guinote 2008). For instance, evaluating advertisements featuring same-ethnicity spokespeople affords consumers' ethnic identity, with the ads serving as identity-relevant cues (Forehand and Deshpandé 2001). The role of affordances has received little attention in the priming literature – presumably because the necessity of affordances is implicitly reflected in the design of most priming studies (for a recent exception, see Cesario et al. 2010). In the context of a general self-identity prime, however, affordances are crucial because only certain aspects of one's self-identity may be relevant in a given situation. Using Amanda as an example, the running aspect of her identity is afforded at a sporting goods store, whereas the business student aspect is afforded in a marketing class.

Our key hypothesis is that the specific nature of the prime-to-behavior effect of a general self-identity prime – such as signing one's name – depends on which aspect of one's self-identity is afforded (i.e., cued) by the situational environment. For example, imagine that Amanda enters

a specialty sporting goods store for runners. In this case, our prediction is that signing her name makes it more likely that the situational affordance (i.e., the opportunity to shop for running gear) will activate the relevant aspect of her self-identity (i.e., being a runner) and, thus, cause her behavior in the store to be more congruent with her runner identity (e.g., spend more time looking at running shoes).

To summarize, we hypothesize that signing one's name acts as a general self-identity prime and that this interacts with situational affordances to activate – and thus promote behavior that is congruent with – the relevant aspect of one's self-identity. This implies concrete predictions about a variety of behavioral consequences, depending on the particular situation that an individual is in. In this article, we test such specific predictions about consumption-related behavior in several domains.

Overview of Studies

We present evidence from four studies that examine the effect of signing one's name in situations that afford different aspects of a consumer's self-identity – strength of identification with particular product domains (studies 1 and 2) and social identities (studies 3 and 4). In each study, participants were randomly assigned to either sign or print their own name on a blank piece of paper (ostensibly for a separate study about handwriting) before entering the focal situation. The first two studies examine how signing their name influences the relationship between how closely consumers associate their self-identity with a specific product domain and their level of engagement in a shopping task in that domain, both in a controlled laboratory setting (study 1) and in an actual retail environment (study 2). This is followed by study 3, which investigates how signing affects how closely people identify with referent social groups.

Finally, study 4 examines how signing their name influences the extent to which consumers signal their social identity through their product choices.

Study 1

It is well-established that consumers use products and possessions to help define aspects of their self-identity (Kleine, Schultz, Kleine, and Allen 1995). Consumers have relationships with particular brands (Fournier 1988), they signal their social identity to others through the products they choose (Berger and Heath 2007; White and Dahl 2007), their extended selves include possessions (Belk 1988), and they consider their engagement in certain activities – and the use of products that are relevant to these activities – to be central to their sense of self (Ahuvia 2005; Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné, and Marsolais 2003). Because people are highly engaged with products and activities that they associate with their self-identity (Tyler and Blader 2003), it is congruent with one's identity to be more (less) behaviorally engaged when shopping in a product domain that is close to (distant from) one's sense of self. Based on our overall hypothesis that signing one's name acts as a general self-identity prime, we predict that signing their name causes consumers to become more engaged when shopping in a product domain that they associate closely with their self-identity, and less engaged in a domain that is distant from their sense of self.

To test this prediction, we examine the engagement of consumers in a shopping task as a function of how closely they associate the product domain with their self-identity. We selected two products – digital cameras and dishwashers – that are similar in terms of their technical complexity, price, and the frequency with which they are used, but that we expected to be more (cameras) or less (dishwashers) closely associated with consumers' self-identities.

Method

Participants. A total of 57 undergraduate students at a large North American university completed a series of studies for partial course credit.

Design. A 3 (handwriting task: sign, print name, control) \times 2 (product category: cameras, dishwashers) between-subjects design was used.

Handwriting Manipulation. Each participant was given two sheets of paper (stapled together) and a pen. The top sheet contained a set of instructions, and a cover story indicating that this was part of a study about handwriting. The bottom sheet contained the instructions “Please sign (print) your name on the line below” at the top of the page, followed by a single blank line.

Procedure. The study was conducted in a university research laboratory. Participants began the study seated in private cubicles. First, they were randomly assigned to a handwriting condition. For the sign and print treatments, participants either signed or printed their name once. Participants in the control condition received the same written instructions as those in the signature condition, with one exception – the last sentence stated “Therefore, you will be asked to sign your name later in this session.” Participants then proceeded to the second (ostensibly unrelated) portion of the study.

In the focal task, participants were randomly assigned to a product category (cameras or dishwashers). They were presented with three products from that category and asked to choose their preferred one from this set. Each of the three alternatives was described along 15 attribute dimensions. The descriptions of the three products were provided on a computer screen that was organized as a table with one row per attribute dimension and one column per alternative. For

each alternative, its brand and model name, a product image, and its price were permanently displayed across the top of the table. The 45 pieces of attribute information were initially hidden, with 45 buttons appearing in their place in the table. Participants were told that they could inspect whichever pieces they wished by clicking the appropriate buttons. Once inspected, a piece of attribute information remained visible for the remainder of the task. Participants were informed that they were free to complete the task by selecting their preferred alternative whenever they felt ready to make their choice.

For each of the two product categories, three alternatives and their descriptions (see appendix A) were selected from the assortment of a large online retailer about a week before the study. For each participant, the alternatives and attribute dimensions were randomly assigned to the columns and rows of the table.

After choosing their preferred alternative, participants were directed to complete an unrelated task that took approximately 10 minutes. Participants then answered a series of questions about the product category (cameras or dishwashers) to which they had been assigned for the focal task. These included measures of how frequently they use the product (1 = never, 10 = frequently), their level of expertise regarding the product domain (1 = novice, 10 = expert), how important the product domain is to them (1 = not at all important, 10 = very important), and how closely they associate their self-identity with the product domain (1 = distant, 10 = close). Participants' responses to these four questions were combined to form a composite measure of how closely they associated their sense of self with that particular product domain ($\alpha = .80$), which we refer to as "identity-product closeness."

Results

Preliminary Analyses. A 2 (product category: cameras vs. dishwashers) \times 3 (handwriting task: sign vs. print name vs. control) ANOVA was used to examine the level of identity-product closeness for each of the two product categories. As expected, participants associated their self-identity much more closely with digital cameras ($M_{\text{cam}} = 5.5$) than with dishwashers ($M_{\text{dish}} = 3.7$, $F(1,51) = 8.8$, $p < .01$). This effect was not moderated by the handwriting task ($p = .75$), nor did the handwriting task have a main effect on identity-product closeness ($p = .83$).

Hypothesis Tests. Two measures of participants' engagement in the shopping task were obtained in this study – the amount of information they inspected and the amount of time they spent on the shopping task. On average, participants examined 30 pieces of attribute information ($Min = 10$, $Max = 45$) and spent 2.6 minutes on the shopping task ($Min = 1$, $Max = 5$).

First, we examine the amount of information inspected by participants. A two-way ANOVA reveals a significant handwriting task \times product category interaction ($F(5,51) = 5.2$, $p < .01$; see figure 2A). A series of planned contrasts support our hypothesis that signing one's name promotes identity-congruent behavior. First, across product categories, participants who had signed their name differed, in terms of their engagement, from those who had printed their name ($F(1,34) = 9.4$, $p < .01$) as well as from those in the control condition ($F(1,35) = 6.5$, $p = .01$), with no difference between the latter two conditions ($p = .64$). Consequently, we contrast the signature condition with the two other conditions combined. As predicted, for the product category more closely associated with consumers' self-identity (i.e., cameras), signing one's name caused significantly greater engagement in the shopping task ($M_{\text{sign_cam}} = 36.9$ attributes, $M_{\text{other_cam}} = 24.1$; $F(1,32) = 8.6$, $p < .01$) whereas, for the product category less closely

associated with participants' self-identity (i.e., dishwashers), signing resulted in marginally less engagement ($M_{\text{sign_dish}} = 24.4$, $M_{\text{other_dish}} = 34.4$; $F(1,21) = 3.0$, $p = .10$).

Next, we examine the time-based measure of engagement in the shopping task using a two-way ANOVA. The shopping time data exhibited a right skew due to their inherent left-truncation (non-negativity constraint) and were log-transformed for analysis. (For clarity of exposition, we present all time-based results in original units. However, all statistical tests are based on models estimated on log-transformed data.) A marginally significant handwriting task \times product category interaction emerges ($F(2,51) = 2.45$, $p = .09$). Planned contrasts support our theory. Across product categories, participants who had signed their name differed significantly, in terms of the amount of time spent on the task, from those in the control condition ($F(1,35) = 3.9$, $p < .05$, one-tailed), and differed marginally from those who had printed their name ($F(1,34) = 2.5$, $p = .06$, one-tailed), with no difference between the latter two conditions ($p = .60$). As predicted, for cameras signing caused marginally greater engagement in the shopping task ($M_{\text{sign_cam}} = 2.8$ minutes, $M_{\text{other_cam}} = 2.1$; $F(1,32) = 1.7$, $p = .10$, one-tailed) whereas for dishwashers – the category less closely associated with participants' self-identity – signing led to significantly less engagement ($M_{\text{sign_dish}} = 1.7$, $M_{\text{other_dish}} = 2.2$; $F(1,21) = 3.79$, $p < .05$, one-tailed).

 Insert figure 2 about here

Discussion

Consistent with our theoretical account of the behavioral consequences of signing one's name, producing their signature caused participants in study 1 to behave in a manner congruent with the afforded aspect of their self-identity – it increased their engagement when shopping in a

product domain that they associate closely with their self-identity, but it decreased their engagement in a domain that is distant from their self-identity. The results of this study also demonstrate that signing – but not printing – one’s name changes behavior relative to a control group in which people neither sign nor print their name. In the next study, we also examine how signing impacts the effect of how closely consumers associate a product domain with their self-identity on their engagement while shopping in that domain, but we do so in a retail setting.

Study 2

This study examines consumers’ engagement while shopping in a field setting. Participants were sent to a specialty retail store (the name of which includes the word “Running”) to choose a pair of running shoes for themselves. Based on our hypothesis that signing one’s name makes it more likely that situational affordances activate the relevant aspect of one’s self-identity and, thus, leads to behavior congruent with the afforded aspect, we predict that signing leads to greater engagement with the shopping task for consumers who identify closely with running, and reduces engagement for consumers who do not identify with running.

Method

Participants. A total of 53 members of a volunteer research participation panel in a large North American city were recruited to complete a series of studies for a monetary reward.

Design. A two-level single factor (handwriting task: sign, print name) between-subjects design was used.

Procedure. The study involved two stages. The first was conducted in a university research laboratory, and the second took place at a retail store. In the first stage, participants

were seated in private cubicles. Using a computer interface, they were (along with a large number of unrelated questions) asked to indicate their level of expertise with respect to running (1 = novice, 10 = expert), how frequently they run (1 = never, 10 = frequently), how interested they are in running (1 = not at all interested, 10 = very interested), and how close running is to their sense of self (1 = distant, 10 = close). Participants' responses to these four questions were combined to form a composite measure of how closely they associated their self-identity with running ($\alpha = .76$), which we refer to as "identity-running closeness." Before they began the second stage of the study, participants completed a series of unrelated studies for approximately 45 minutes.

At the beginning of the second stage of the study, participants received directions to a coffee shop that was approximately a ten-minute walk from the laboratory. They were instructed to walk there (individually) to meet another researcher. Upon arrival at the coffee shop, participants were randomly assigned to one of the two treatment conditions of the handwriting task – i.e., asked to either sign or print their name five times (for a study about handwriting). After completing the handwriting task, participants were given instructions for an ostensibly unrelated study about running shoes. These instructions read as follows:

"Your next task is to go to {name of store} located 1 block south on {name of street}. We want you to choose a pair of running shoes for yourself. Your choice is consequential. One participant in this study (selected at random) will receive his/her chosen pair of shoes and a cash amount equal to \$200 minus the price of the shoes.

For example:

- If your shoes cost \$90, you will receive the shoes and \$110 in cash.
- If your shoes cost \$190, you will receive the shoes and \$10 in cash."

Participants were instructed to return to the coffee shop as soon as they had selected their preferred pair of running shoes. Once they arrived back at the coffee shop, they completed a brief questionnaire in which they were asked to indicate the number of pairs of shoes they tried on in the store, the brand name of the shoe they selected (e.g., Nike), its model name (e.g., Air III), and its pre-tax price. The amount of time each participant spent in the store was measured and recorded inconspicuously.

Results

Two measures of participants' engagement in the shopping task were obtained in this study – the number of pairs of running shoes they tried on and the amount of time they spent in the store. On average, participants spent 11.7 minutes in the store ($Min = 5$, $Max = 30$) and tried on 1.1 pairs of running shoes ($Min = 0$, $Max = 5$).

First, we estimated a mixed-effects Poisson regression with the number of pairs of shoes tried on as the dependent variable and handwriting task (sign vs. print name), identity-running closeness, and their interaction as independent variables. This analysis reveals a significant handwriting task \times identity-running closeness interaction ($\beta = 0.32$, $p < .05$; see figure 3). To shed light on the nature of this interaction, we examine the effect of identity-running closeness on the number of pairs tried on for each handwriting condition. As hypothesized, for participants who had signed their name, identity-running closeness had a significant positive impact on how many pairs of running shoes they tried on in the store ($\beta = 0.30$, $p < .001$), whereas no such effect was observed for those who had printed their name ($p = .83$). A spotlight analysis (Aiken and West 1991; Fitzsimons 2008) at 1.5 standard deviations above the mean of identity-running closeness reveals that, as predicted, for consumers who closely associate their identity with running, signing (vs. printing) their name caused an increase in the number of pairs of running

shoes they tried on ($\beta = 0.79, p < .05$). The corresponding analysis at 1.5 standard deviations below the mean indicates that, as hypothesized, for consumers who do not associate their identity with running, signing led to a reduction in the number of pairs of running shoes they tried on ($\beta = -1.07, p < .01$).

 Insert figure 3 about here

To examine the time-based measure of engagement in the shopping task, we regressed the (log-transformed) amount of time participants spent shopping for their pair of running shoes on the same set of independent variables. The results corroborate those for the number of pairs tried on. The handwriting task \times identity-running closeness interaction is marginally significant ($\beta = 0.14, p = .06$). As predicted, for participants who had signed their name, identity-running closeness had a significant positive influence on how much time they spent shopping ($\beta = 0.10, p < .05$), whereas this relationship was not significant in the print condition ($p = .45$). Spotlight analyses at 1.5 standard deviations above and below the mean of identity-running closeness reveal that, as hypothesized, for consumers who closely associate their identity with running, signing increased the amount of time they spent shopping for their pair of running shoes ($\beta = 0.46, p < .05$, one-tailed), whereas for consumers who do not associate running with their self-identity, signing reduced the amount of time spent shopping ($\beta = -0.38, p < .05$, one-tailed).

Discussion

The results of studies 1 and 2 support our hypothesis that signing one's name acts as a general self-identity prime. Evidence from three different product domains (digital cameras, dishwashers, and running shoes) shows that providing their signature induces consumers to behave in a manner congruent with the afforded aspect of their self-identity. Signing their name

caused participants who associated a product domain more (less) closely with their self-identity to become more (less) behaviorally engaged when shopping in that domain – it led to an increase (decrease) in the number of pieces of product information inspected, in the number pairs of shoes tried on, and in the amount of time spent shopping in a retail store.

Although these findings are fully consistent with our theoretical account of the signature effect, direct evidence that signing activates the specific aspect of one’s self-identity that is afforded by the situation would provide even stronger support for this account. To that end, studies 3 and 4 were designed to allow a more conclusive assessment of the proposed mental mechanism, and they do so by examining the effect of signing one’s name on behavior in connection with consumers’ social identities.

Study 3

Each of us possesses *social identities* – associations with social groups – that are central to how we view ourselves (Tajfel 1974). We define ourselves through our membership in some groups (“in-groups”) and our non-membership in others (“out-groups”). Based on our overall theoretical account that signing makes it more likely that situational affordances activate the relevant aspect of one’s self-identity, we hypothesize that signing one’s name in a context that affords a particular social identity activates one’s identification with the afforded social group.

In this study, some participants were asked to name a social group to which they belong (i.e., an in-group), whereas others were asked to name a social group to which they do not belong (i.e., an out-group). All participants then responded to three questions pertaining to the specific group that they had selected – how closely they identify with the group, how much they like its members, and how similar they believe they are to its members.

We have two key predictions. First, based on the notion that signing activates one's identification with the afforded social group, we predict that signing their name leads participants to identify more (less) closely with the in-group (out-group). Critically, because our theory predicts that signing activates the association between one's self-identity and the afforded social group, signing should not moderate how much one likes members of each type of group, nor how similar one feels to the members of these groups. Our second prediction is that – based on prior work showing that activation of an identity leads people to respond more quickly to statements pertaining to that identity (Brewer and Gardner 1996; Wheeler and Fiske 2005) – signing causes individuals to take less time to answer the questions regarding the group they had selected.

Method

Participants. A total of 118 undergraduate students at a large North American university completed a series of studies for partial course credit.

Design. A 2 (handwriting task: sign, print name) \times 2 (type of social group: in-group, out-group) between-subjects design was used.

Procedure. The study was conducted in a university research laboratory. Participants were randomly assigned to one of the four conditions. Seated in private cubicles, they first completed the handwriting task – i.e., they either signed or printed their name once on a blank sheet of paper (ostensibly for an unrelated study about handwriting). They were then asked to turn to the computer in their cubicle and follow the instructions provided on the screen (based on Berger and Heath 2007), which read: “In the text box below, please type in the name of a social group that you like and consider yourself quite similar to or belong to (dissimilar from or do not belong to). This group should be a tightly knit group, consisting of individuals who are very

similar to one another.” After that, participants were asked a series of questions about the social group they had selected. They rated how strongly they identify with that group (1 = very little, 7 = a great deal), how much they like the people in the group (1 = not at all, 7 = a great deal), and how similar they believe they are to the members of the group (1 = extremely dissimilar, 7 = extremely similar).

Results

Responses to the three questions were analyzed with 2 (handwriting task: print vs. sign name) \times 2 (type of social group: in-group vs. out-group) ANOVAs. As expected, participants identified more closely with in-groups than with out-groups ($M_{in} = 8.1$, $M_{out} = 4.1$; $F(1,114) = 138.0$, $p < .001$), and they felt more similar to members of in-groups than to members of out-groups ($M_{in} = 7.7$, $M_{out} = 4.0$; $F(1,114) = 131.4$, $p < .001$). This indicates that our manipulation of social group type was effective.

An examination of how strongly participants identified with the social group reveals a significant handwriting task \times social group type interaction ($F(1,116) = 4.6$, $p < .05$; see figure 4). Planned contrasts indicate that, as predicted, participants who had signed their name identified significantly more with in-groups ($M_{in_sign} = 8.4$, $M_{in_print} = 7.6$; $F(1,62) = 3.0$, $p < .05$, one-tailed) and marginally less with out-groups ($M_{out_sign} = 3.5$, $M_{out_print} = 4.4$; $F(1,54) = 2.1$, $p = .07$, one-tailed) than those who had printed their name.

By contrast, whether participants had signed or printed their name does not moderate how similar they believed they were to the members of the group (handwriting task \times social group type interaction: $p = .32$), nor was there a main effect of handwriting task on similarity ($p = .29$). Participants liked in-group members more than out-group members ($M_{in} = 8.2$, $M_{out} = 6.4$;

$F(1,114) = 28.8, p < .001$), as expected, but the handwriting task does not moderate how much they liked the members of the group ($p = .24$). A main effect of handwriting task reveals that participants who had signed their name liked members of both types of social groups slightly more than did those who had printed their name ($M_{\text{sign}} = 7.7, M_{\text{print}} = 7.0; F(1,114) = 4.0, p < .05$). This pattern of results is consistent with our hypothesis that signing activates one's identification with the afforded social group, and it suggests that signing does not affect one's perceived similarity to that group.

 Insert figure 4 about here

Next, we examine the (log-transformed) total amount of time it took participants to respond to the three questions about the social group they had selected with an ANOVA using the same set of independent variables. A marginally significant main effect of handwriting task indicates that, as predicted, participants who had signed responded more quickly than those who had printed their name ($M_{\text{sign}} = 27.5$ seconds, $M_{\text{print}} = 30.9$ seconds; $F(1,114) = 2.4, p = .06$, one-tailed). A main effect of social group type also emerges ($M_{\text{in}} = 27.7$ seconds, $M_{\text{out}} = 31.1$ seconds; $F(1,114) = 3.5, p < .05$), which is consistent with prior work showing that people respond more quickly to statements about in-groups than to statements about out-groups (Pratto and Shih 2000). Critically, the handwriting task \times social group type interaction is not significant ($p = .24$), suggesting that – in line with our theory – signing activated the relevant aspect of participants' self-identity in both the in-group and the out-group condition.

Discussion

The results of study 3 support our theoretical account that signing one's name acts as a general self-identity prime. Signing caused people to identify even more closely with groups to

which they belong, and even less closely with groups to which they do not belong. Moreover, participants who had signed their name responded more quickly to statements about the afforded social identity, which provides strong process evidence that signing activates the relevant aspect of one's self-identity.

Study 4

This study examines the effect of signing on product choices in situations that afford a social identity, and it provides an opportunity to obtain further evidence on the mental process implied by our theoretical account of the signature effect – identity activation. We used an identity-signaling paradigm adapted from Berger and Heath (2007) requiring participants to make choices in 19 different preference domains that vary in the extent to which they are relevant to signaling one's social identity. As in study 3, some participants were asked to name a group to which they belong (in-group), whereas others were asked to name a group to which they do not belong (out-group). For each of the 19 domains, participants were asked to indicate which of three available options they would choose, having been provided with information about the preferences of the members of the in- or out-group they had named. The three options varied in terms of how popular they were with the members of that specific social group. Choice of the most popular option indicated conformity to the social group, whereas choice of the least popular option indicated divergence from it (see Berger and Heath 2007).

We have three predictions for this study. First, consistent with our overall hypothesis that signing promotes behavior that is congruent with the relevant aspect of one's self-identity, we predict that signing causes consumers to make choices that are more congruent with the afforded social group – participants who have signed their name should conform more with in-groups and

diverge more from out-groups. Second, in line with our hypothesis that providing a signature activates one's identification with the afforded social group, we predict that signing has a stronger influence on choice in preference domains that are more relevant to signaling one's identity to others (e.g., music genre) than in domains that are not as relevant in this regard (e.g., bike light).

Our third prediction for this study pertains to decision time. The choices that participants were able to make can be classified as either identity-congruent (conforming with an in-group or diverging from an out-group) or identity-*incongruent* (diverging from an in-group or conforming with an out-group). In general, identity-*incongruent* choices tend to reflect greater conflict than identity-congruent choices. We predict that activation of one's identification with the afforded social group (caused by signing one's name) amplifies the conflict associated with making choices that are identity-*incongruent* (and reduces the conflict associated with making identity-congruent choices). In line with prior work showing that the amount of time individuals take to make a choice is an indicator of how much conflict the decision involves (Busemeyer and Townsend 1993; Diederich 2003; Tyebjee 1979), we predict that signing causes decision times to be longer for identity-*incongruent* than for identity-congruent choices.

Method

Participants. A total of 143 undergraduate students at a large North American university completed a series of studies for partial course credit.

Design. A 2 (handwriting task: sign, print name) \times 2 (type of social group: in-group, out-group) \times 19 (preference domain) mixed design was used, with preference domain being manipulated within-subject and the two other factors being manipulated between-subjects.

Procedure. The study was conducted in a university research laboratory. Participants were seated in private cubicles, and they were randomly assigned to one of the four between-subjects conditions. The study involved three stages. In the first stage, participants completed a handwriting task identical to that used in study 3 – either signing or printing their name once – and then turned to the computer in their cubicle, where they were asked to enter the name of an in-group or out-group (depending on which condition they had been assigned to). The remainder of the study was computer-based.

In the second stage, participants chose one of three options in each of the 19 preference domains. The order in which these domains were presented was determined at random for each participant. For each domain, the following instructions were provided: “Imagine that we asked the members of the group you identified, {name of group}, to choose one of three {preference domain}. The figure below represents the proportion of group members that chose each option.” This statement was accompanied by a pie graph (see figure 5) that indicated that 65% of the members of the group had chosen option A, 25% had chosen option B, and 10% had chosen option C. Below the pie graph, the following question appeared: “Which {preference domain} would you choose?” Participants indicated their choice by clicking one of three response buttons (labeled “Option A”, “Option B”, and “Option C”).

 Insert figure 5 about here

Finally, in the third stage, participants were asked a series of questions about the social group they had selected. They rated how strongly they identify with that group (1 = very little, 7 = a great deal), how much they like the people in the group (1 = not at all, 7 = a great deal), and

how similar they believe they are to the members of the group (1 = extremely dissimilar, 7 = extremely similar).

Results

Preliminary Analyses. As expected, participants identified more closely with in-groups than with out-groups ($M_{in} = 7.4$, $M_{out} = 4.8$; $F(1,139) = 52.3$, $p < .001$), and they felt more similar to members of in-groups than to members of out-groups ($M_{in} = 7.1$, $M_{out} = 4.8$; $F(1,139) = 63.6$, $p < .001$). This indicates that our manipulation of social group type was effective. On average, participants liked members of out-groups ($M_{out} = 7.1$ out of 10), although they did like members of in-groups slightly more ($M_{in} = 8.1$; $F(1,139) = 14.5$, $p < .001$). Unexpectedly, handwriting task had a main effect on how closely participants identified with the social group ($M_{print} = 6.7$, $M_{sign} = 5.9$; $F(1,139) = 5.27$, $p = .02$) and on how similar they felt to members of the social group ($M_{print} = 6.4$, $M_{sign} = 5.8$; $F(1,139) = 66.3$, $p = .02$), but not on how much participants liked group members ($M_{print} = 7.7$, $M_{sign} = 7.6$; $p = .66$). Critically, the handwriting task \times social group type interaction was not significant for any of these variables (strength of identification: $p = .14$; similarity: $p = .30$; liking: $p = .71$). This pattern of results differs from that observed in study 3, which is not surprising given that these measures were taken after participants had made choices in 19 preference domains.

Hypothesis Tests. Our first two predictions were that signing would lead participants to make more identity-congruent choices, and that this effect would be greater in domains that are more relevant to signaling one's identity to others. To test these predictions, we first constructed an identity-relevance score for each preference domain based on the results of Berger and Heath's study 2, such that the least identity-relevant domain was assigned a value of 1 and the most identity-relevant one was given a value of 19 (see appendix B). We then performed a

mixed-effects logistic regression with choice of option C – indicating divergence – as the dependent variable and with handwriting task (sign vs. print name), type of social group (in-group vs. out-group), the identity-relevance score of the preference domain, and all possible interactions as independent variables, along with a random effect for participant. A main effect of identity-relevance ($\beta = 0.08, p < .001$) indicates that, overall, the inclination to diverge was greater in preference domains that are relevant to signaling one’s identity to others, as expected. More importantly, this analysis reveals a significant three-way interaction ($\beta = 0.09, p < .05$). To shed light on the nature of this three-way interaction, we examine the handwriting task \times social group type interaction separately at the highest and the lowest levels of identity-relevance. As predicted, the handwriting task \times social group type interaction is significant when identity-relevance is highest ($\beta = 1.40, p < .01$), but not when identity-relevance is lowest ($p = .74$). Planned contrasts (at the highest identity-relevance score) reveal that, in line with our theory, signing caused participants to diverge more from out-groups ($\beta = 0.74, p < .05$) and diverge less from in-groups ($\beta = -0.65, p < .05$) in domains that are relevant to signaling one’s identity.

For choice of option A (indicating conformity), a similar mixed-effects logistic regression reveals a main effect of identity-relevance ($\beta = -0.16, p < .001$) indicating that, as expected, the inclination to conform was lower in preference domains that are relevant to signaling one’s identity to others. More importantly, a marginally significant three-way interaction ($\beta = 0.02, p = .07$) emerges. Consistent with our theoretical account, the handwriting task \times social group type interaction is significant when identity-relevance is highest ($\beta = 0.41, p < .001$), but not when it is lowest ($p = .32$). Planned contrasts (at the highest identity-relevance score) reveal that, as predicted, signing caused participants to conform more with in-groups ($\beta = 0.84, p < .01$) and conform less with out-groups ($\beta = -0.82, p < .05$) in identity-relevant domains.

Figure 6 illustrates the nature of the interplay between handwriting task, social group type, and identity-relevance of the preference domain. We split the preference domains into two categories based on their degree of identity-relevance. Specifically, the ten domains with the highest identity-relevance scores were categorized as “More Identity-Relevant” (Favorite Actor, Car Brand, Car Model, Hairstyle, Jacket, Music Artist, Music CD, Music Genre, Sitcom, Sunglasses), and the remaining domains were categorized as “Less Identity-Relevant” (Backpack, Bike Light, Detergent, Dinner Entrée, Dish Soap, Power Tools, Sofa, Stereo, Toothpaste). In the more identity-relevant preference domains, signing caused greater divergence from out-groups ($P_{\text{sign_out}} = 35\%$, $P_{\text{print_out}} = 23\%$) and less divergence from in-groups ($P_{\text{sign_in}} = 20\%$, $P_{\text{print_in}} = 28\%$), and it caused greater conformity to in-groups ($P_{\text{sign_in}} = 49\%$, $P_{\text{print_in}} = 34\%$) and less conformity to out-groups ($P_{\text{sign_out}} = 22\%$, $P_{\text{print_out}} = 34\%$). By contrast, signing had no effect in the domains that are less relevant to signaling one’s identity.

 Insert figure 6 about here

Our third prediction was that signing would cause decision times to be longer for identity-incongruent choices (divergence from an in-group or conformity with an out-group) than for identity-congruent choices (conformity with an in-group or divergence from an out-group). We examined participants’ (log-transformed) decision times using a mixed-effects model with handwriting task (sign vs. print name), whether the chosen option was identity-congruent or identity-incongruent, and their interaction as predictor variables, along with a dummy variable for preference domain and a random effect for participant. This analysis reveals a significant interaction effect ($F(2,2554) = 9.5$, $p < .01$), the nature of which provides strong support for our theoretical account (see figure 7). Signing caused participants to take more time to make identity-incongruent than identity-congruent choices ($M_{\text{sign_incon}} = 5.14$ seconds, $M_{\text{sign_con}} = 4.23$

seconds; $p < .01$), whereas there was no difference in decision times among those who had printed their name ($M_{\text{print_incon}} = 4.75$ seconds, $M_{\text{print_con}} = 4.74$ seconds; $p = .87$). Thus, consistent with our theoretical account that signing one's name acts as a general self-identity prime, signing caused decision times to be longer when participants made choices that were in conflict with, rather than congruent with, the afforded aspect of their self-identity.

 Insert figure 7 about here

Discussion

The findings of study 4 provide strong evidence that signing one's name acts as a general self-identity prime. Consistent with our hypothesis, signing their name had a polarizing effect on participants' choices in a setting where a particular social identity was afforded – it caused them to diverge more from an out-group and conform more with an in-group, and this effect was stronger in domains that are more relevant to signaling one's identity to others. Finally, an analysis of decision times supports our proposed mental mechanism – namely, that the signature effect is driven by the activation of the relevant aspect of one's self-identity.

General Discussion

Consumers sign their name in many everyday situations, and they do so for a wide range of purposes – such as to identify themselves, to authorize payment, to enter into agreements, and to commit themselves to future obligations. Yet, despite the pervasiveness of handwritten signatures in human economic life, prior research has provided little insight into whether signing one's name influences subsequent behavior. We have introduced the hypothesis that signing one's name acts as a general self-identity prime, thus making it more likely that situational

affordances activate the relevant aspect of one's self-identity. Converging evidence from four studies – examining various consumption domains and involving different aspects of a consumer's self-identity – demonstrates that signing promotes behavior congruent with the specific aspect of one's self-identity that is afforded by the situation.

The present research makes several key contributions to our understanding of consumer behavior. It is the first to demonstrate that signing one's name influences subsequent behavior in a predictable manner. This finding enhances our understanding of the significance of the act of signing, and it has important implications for retailers – who might influence customer behavior through creative requests for signatures (e.g., on surveys). This work also makes a novel contribution to the priming literature – which has focused on the role of cues in the activation of particular constructs or identities (e.g., Berger and Fitzsimons 2008; Kay, Wheeler, Bargh, and Ross 2004; North, Hargreaves, and McKendrick 1997) – by showing that the act of producing one's signature affects one's subsequent responsiveness to identity-relevant cues.

This article also makes an important contribution to prior work that has explored the general priming of one's self-concept (such as through exposure to self-referent words or by having one respond to personality test items; see Dijksterhuis and Van Knippenberg 2000; Hamilton and Shuminsky 1990; Smeesters, Yzerbyt, Corneille, and Warlop 2009) by identifying a simple intervention – signing one's name – that acts as a general self-identity prime. In addition, it extends recent work suggesting that a given intervention can produce different effects on behavior (Cesario et al. 2010; Wheeler and Berger 2007) by demonstrating that an identity-relevant action such as producing one's signature can have contrasting effects on one's behavior depending on which aspect of one's self-identity is afforded in a particular situation.

The findings presented here also provide a novel perspective on prior research that examines how signing a document influences subsequent behavior. Because people are more likely to engage in a behavior once they have signed a document that indicates their intention to do so (Anker and Crowley 1981; Mazar et al. 2008; McCabe and Trevino 1997; Rogers et al. 1988; Stevens et al. 2002; Ureda 1980; Williams et al. 2005), one might assume that merely signing one's name implies a commitment (Cialdini 2001; Schwarzwald, Bizman, and Raz 1983). However, people often sign documents for purposes that do not imply a commitment – they sign to authorize an action (e.g., a professor signing to approve a dissertation), to identify themselves (e.g., on a passport), or to affirm their understanding of a document's contents (e.g., an insurance form). Although a signature does not necessarily imply commitment, it does always represent one's identity. Notably, our finding that signing causes people to spend *less* time and effort when shopping in a product domain that they do not identify closely with (studies 1 and 2) is consistent with our theoretical account, but not with one based on commitment.

Implications and Directions for Future Research

This article's key finding – that providing a signature predictably influences subsequent behavior – suggests novel interventions that sellers could use in order to influence consumer behavior. For instance, a retailer might ask shoppers to sign their name after completing a survey, to enter a prize draw, or to enroll in a loyalty program, since doing so should lead consumers who identify closely with the store's products to subsequently be more engaged. However, such signature interventions should be used cautiously as signing tends to reduce engagement in consumers who lack such identification. For instance, a sporting goods store specializing in high-end running gear could benefit from having avid runners sign, but might be better off not soliciting signatures from average consumers shopping for a pair of sneakers.

The present work suggests several directions for future research. First, although our results highlight the robustness of the signature effect – it holds for different aspects of one’s self-identity, it can be obtained both in the lab and in field settings, and a single signature is sufficient to change behavior – future work should aim to identify boundary conditions for the effect. One possible condition is the presence of any factor that inhibits consumers’ opportunity to properly produce their signature. In line with recent work indicating that writing with one’s non-dominant hand can shake one’s self-view confidence (Gao, Wheeler, and Shiv 2009), we expect that a disruption of the process of signing – such as by forcing people to sign in a constrained space (e.g., on a small slip of paper) or with utensils that prevent them from precisely replicating their signature (e.g., on an electronic signature pad) – should diminish the signature effect (and perhaps even produce contrasting effects on behavior, such as causing consumers to subsequently choose self-view bolstering products to restore their confidence).

Second, although our results indicate that signing leads to the activation of the specific aspect of one’s self-identity that is hypothesized to be afforded by the situation, our theory does not require that only a single aspect is activated – merely that the relevant aspect is activated more strongly than others. Real-world situations (particularly complex ones) can simultaneously afford multiple, potentially conflicting aspects of one’s self-identity (Hong, Benet-Martinez, Chiu, and Morris, 2003; Shih, Pittinsky, and Ambady, 1999), and this may lead to the joint activation of different aspects. Enhancing our understanding of what happens when multiple aspects of one’s identity are simultaneously afforded is an important area for further research.

Finally, it would be worth examining how providing a signature within a consumption context affects behavior. One limitation of the present work is that participants signed on blank pieces of paper in task that was ostensibly unrelated to consumption. Although this ensured high

internal validity of our findings by clearly isolating the act of signing, it did so at the expense of external validity. Future research should investigate how signing one's name might interact with the nature of the document being signed. For example, is the signature effect diminished or enhanced when consumers sign important documents such as mortgage agreements? Similarly, does the purpose of the signature – e.g., verifying that a course of action has been completed versus committing to a future course of action – moderate its effect on subsequent behavior? Because consumers sign (or can be asked to do so) in many consumption contexts, it is important to develop a deeper understanding of how producing one's signature influences behavior.

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FIGURE 1.
EXAMPLE OF SELF-IDENTITY

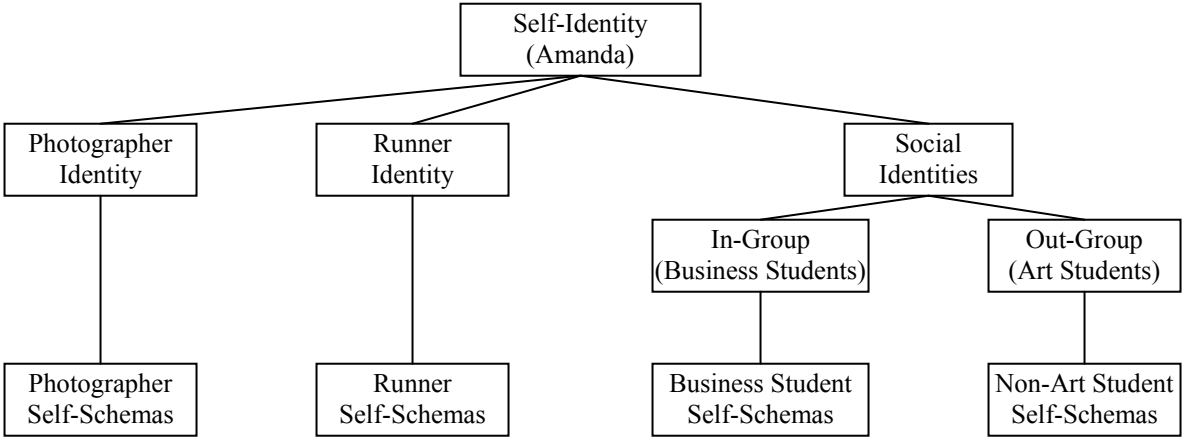


FIGURE 2.
 STUDY 1: AMOUNT OF PRODUCT INFORMATION INSPECTED AS A
 FUNCTION OF PRODUCT CATEGORY AND HANDWRITING TASK

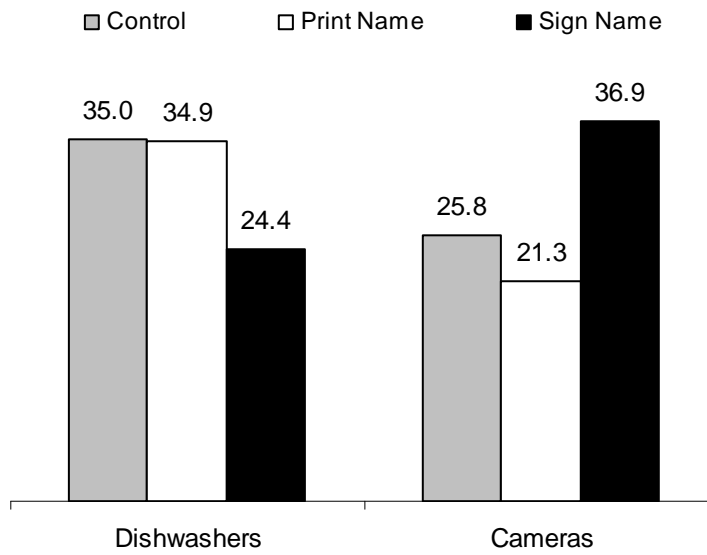
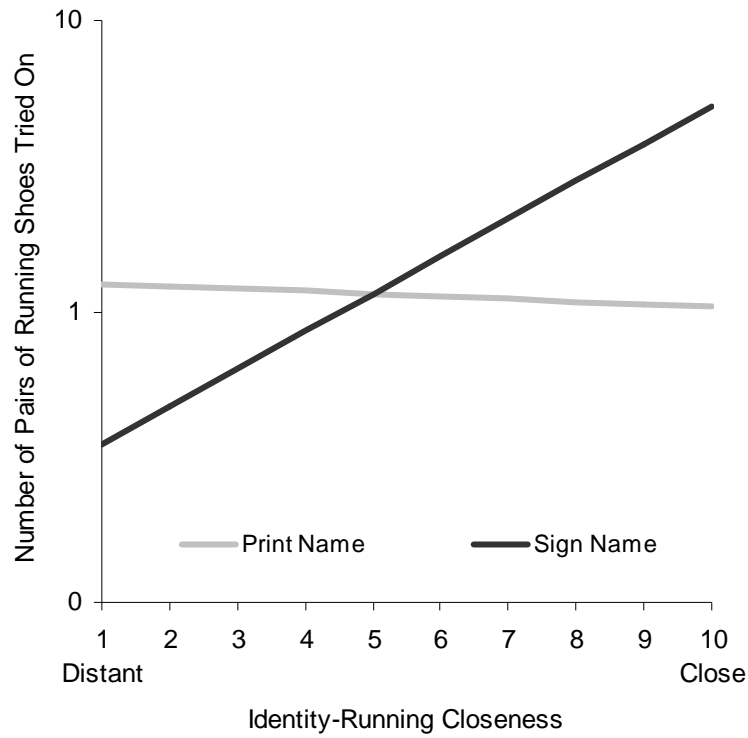


FIGURE 3.
 STUDY 2: NUMBER OF PAIRS OF RUNNING SHOES TRIED ON AS A FUNCTION
 OF IDENTITY-RUNNING CLOSENESS AND HANDWRITING TASK



Note: This figure shows the fitted regression lines.

FIGURE 4.
STUDY 3: IDENTIFICATION WITH A SOCIAL GROUP AS A FUNCTION
OF SOCIAL GROUP TYPE AND HANDWRITING TASK

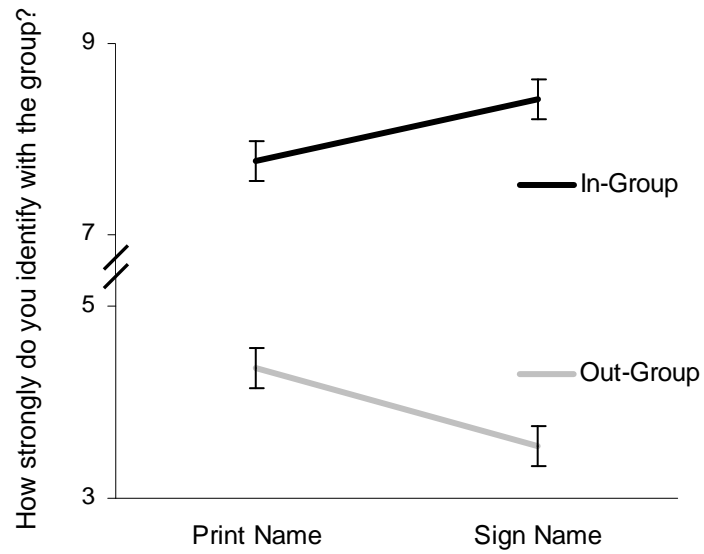


FIGURE 5.
STUDY 4: PIE GRAPH REPRESENTING THE PREFERENCE
DISTRIBUTION OF SOCIAL GROUP MEMBERS

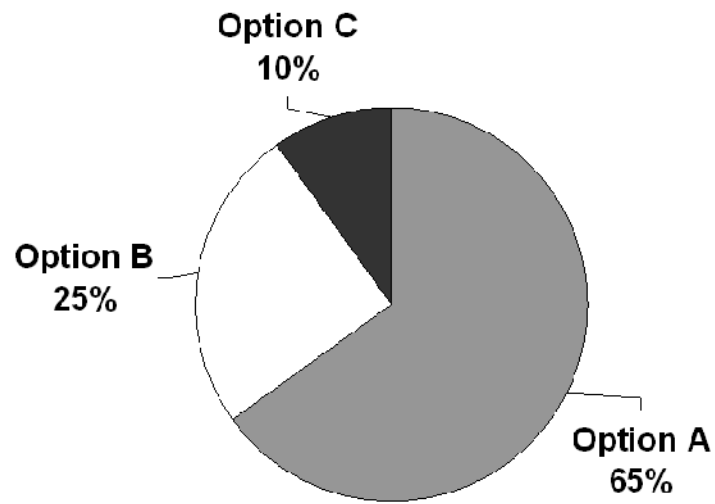


FIGURE 6.
 STUDY 4: CONFORMITY AND DIVERGENCE AS A FUNCTION OF HANDWRITING
 TASK, SOCIAL GROUP TYPE, AND RELEVANCE OF THE PREFERENCE DOMAIN TO
 SIGNALING ONE’S IDENTITY

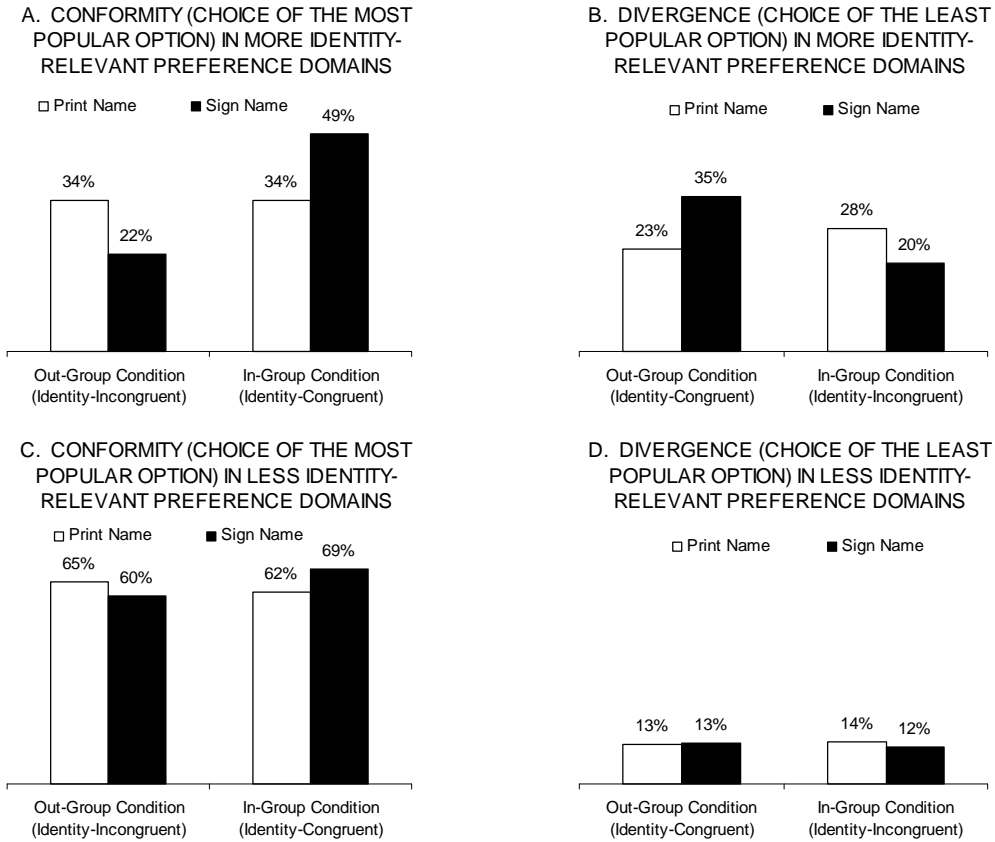
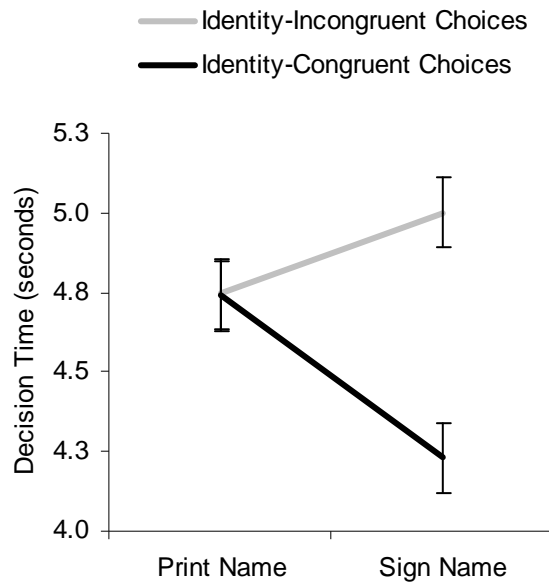


FIGURE 7.
STUDY 4: DECISION TIME AS A FUNCTION OF HANDWRITING TASK AND
WHETHER CHOICE IS IDENTITY-INCONGRUENT OR IDENTITY-CONGRUENT



APPENDIX A. PRODUCT DESCRIPTIONS (STUDY 1)

Product Categories

Digital Cameras				Dishwashers			
Brand	Nikon	Olympus	Sony	Brand	Frigidaire	Maytag	Whirlpool
Model	P80	SP 570	DSC-H50	Model	GLD 225	MDB 560	DU 1055
Price	\$400	\$400	\$400	Price	\$500	\$500	\$500
35mm Equivalent Zoom	486 mm	520 mm	465 mm	Filtration System	100% Filtration	Micro-Fine Plus	Automatic Purge Filtration
Viewfinder Type	Electronic	Optical	Optical	Delay Start Options	2, 4, 6 hrs	1-6 hrs	2-4 hrs
Digital Sensor Size	10.0 MP	10.0 MP	10.0 MP	Drying Options	Heat, No Dry	Heated Dry	Heated Dry
Digital Zoom	4.0 X	5.0 X	2.0 X	EnerGuide Rating	343 KWh / Year	346 KWh / Year	370 KWh / Year
Effective Size of Digital Sensor	10.7 MP	10.0 MP	9.1 MP	Interior Finish	Dura Life	Plastic	Plastic
Flash Range	9 meters	7 meters	18 meters	Number of Cycles	4	4	4
Focus Range	40 cm	16 cm	120 cm	Product Dimensions	60.6 (W) x 84.7 (H) x 61.3 (D) cm	60.6 (W) x 87.6 (H) x 60.6 (D) cm	60.6 (W) x 87.6 (H) x 62.2 (D) cm
Internal Memory	52 MB	45 MB	15 MB	Warranty	1 Year Parts & Labor	1 Year Limited	1 Year Limited
LCD Monitor Size	2.7 inches	2.7 inches	3 inches	Weight	33 kg	42 kg	42 kg
Aperture Range	f/2.8 – f/45	f/2.8 – f/45	f/2.7 – f/8.0	Sensors	Smart Soil	Precision Clean & Turbidity	Auto Soil Sensor
Optical Zoom	18 X	20 X	15 X	Short (Econo) Wash	Yes	No	No
Shutter Speed	1 / 4000 sec	1 / 2000 sec	1 / 4000 sec	Wash System	Precision Wash	Jetclean II Wash System	Sheer Clean Wash
Weight	365 grams	131 grams	554 grams	Wash Levels	5	3	5
Warranty	2 Years Parts & Labor	1 Year Parts & Labor	1 Year Parts & Labor	Rack Material	Nylon	Vinyl	PVC
Camera Dimensions	11.0 (W) x 7.9 (H) x 7.8 (D) cm	11.7 (W) x 7.9 (H) x 7.9 (D) cm	11.6 (W) x 8.1 (H) x 8.6 (D) cm	Lock Type	Squeeze	Pull	Latch Engage

APPENDIX B. PREFERENCE DOMAINS (STUDY 4)

Domain	Identity-Relevance Score
Bike Light	1
Dish Soap	2
Detergent	3
Toothpaste	4
Power Tools	5
Stereo	6
Sofa	7
Backpack	8
Dinner Entrée	9
Sunglasses	10
Car Model	11
Favorite Actor	12
Car Brand	13
Jacket	14
Sitcom	15
Favorite CD	16
Music Artist	17
Hairstyle	18
Music Genre	19

Note: Based on Berger and Heath (2007, study 2)