

Retail space invaders: when employees' invasion of customer space increases purchase intentions

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Abstract This research fills a gap in the retailing literature regarding physical proximity while shopping. Most research in this area examines perceived crowding or social presence and largely ignores issues of distance. Using four studies we explore the impact of the physical proximity of an employee to a shopper. Contrary to common belief, we show that such encroachments can increase consumers' acceptance feelings and their purchase intentions. We illustrate how these results are consistent with social identity theory. The results show a shopper can have higher purchase intentions the closer an employee physically gets to them due to an increase in feelings of acceptance. This result is strengthened when being included to an in-group is important to the shopper. The negative effects of feeling anxious in a purchase situation can also be buffered the closer an employee gets. Finally, the positive relationship of felt acceptance to purchase intentions is most critical when the product being purchased is perceived as less expressive. These results have important implications to our understanding of shopper behavior and reactions to physical proximity.

Keywords Physical proximity · Personal space · Social identity theory · Shopper behavior · Acceptance · Purchase intentions · Retailing

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“Don't stand, don't stand so,
Don't stand so close to me.”

–Don't Stand So Close to Me, The Police

Introduction

Current extant literature and common belief would suggest shoppers prefer another person to not stand close to them, as the lyrics noted above suggest. When personal space is invaded, typical reactions are for the person to feel discomfort (Evans and Wener 2007; Goffman 1971) or to flee (Altman 1975; Barash 1973; Felipe and Sommer 1966; Goffman 1971; McDowell 1972; Patterson et al. 1971). This research will show, contrary to the well-known phrasing of the Police song, that an employee standing close to a shopper can actually have positive consequences due to customers' feelings of increased acceptance from this type of spatial encroachment.

Understanding this element of the physical environment and the consequences of invasion have important implications for retailers (Lanier and Saini 2008) regarding satisfaction (Babin and Darden 1996), repatronage intentions (Grace 2009), behavioral intentions (Kim and Srivastava 1995; Kucuk and Maddux 2010; Tsao et al. 2009), and even lawsuits (Troianovski 2012). Additionally, organizations can cocreate value of the shopping experience (Vargo and Lusch 2004) by creating an atmosphere that cultivates attachment when consumers feel a sense of place within the store (Brocato et al. 2015) from increased feelings of acceptance. Understanding how to increase feelings of acceptance in shoppers can create a strategic advantage for a retailer through better relationship marketing efforts (Morgan and Hunt 1994). To do so, properly training employees as to the boundaries of personal space is essential. For example, one company had to fire an employee

who gave hugs to shoppers because some customers complained, and the employee was arrested for disorderly conduct. However, many loyal shoppers disagreed with the outcome and boycotted and picketed the company. While one group wanted no physical contact at all, the other sought it and would choose that employee's line just to get a hug from him (Ryan 2015). To avoid bad press and lawsuits, managers might be tempted to give strict guidelines on giving plenty of personal space to shoppers. However, our research shows invasions of personal space (without touching) can be very beneficial to the shopper's feelings of acceptance and store outcomes.

Physical proximity is the perceived distance in spatial terms that, when reduced, can be taken as an invasion of personal space, or the invisible boundary surrounding a person (Altman 1975). Appendix Table 3 reviews relevant proximity literature and outlines the gaps this research addresses. The first gap is the physical distance of the employee in a retail setting. Marketing research has examined employees as a social presence (Baker et al. 2002), the impact of attractive service providers (Wan and Wyer 2015), crowding (O'Guinn et al. 2015; Eroglu and Machleit 1990; Eroglu et al. 2005), interactions with the physical environment (Bitner 1992), and the number of employees visible (Grewal et al. 2003). However, previous research does not address the physical distance of the employee and the impact distance has on the shopper. This gap has particularly important implications for retailers and managers, as a current retail trend is to increase physical space through larger aisles, a format Walgreens has recently implemented (Retail Customer Experience 2010).

The second gap is that current physical proximity research is largely conducted in psychology contexts and does not involve a retail setting or a consumer's purchase decision, as the participants in these studies were not actually in a store wanting to make a purchase and having a tangible end goal. Relatedly, there is no store or brand attachment to be examined in existing articles, as the personal space encroachments usually have involved passing in places like a hall or street (e.g., Konečni et al. 1975). There is some existing literature on physical proximity in high-service contexts, like a hair salon, where touch and verbal communication are a necessity. However, this would not be the norm in many retail settings. Thus there is a need for research in a retail setting where personal space is isolated from other variables.

A third gap this research addresses involves the mechanisms responsible for the impact of distance on purchase intentions. We examine the relationship through a mediator of acceptance and moderators of in-group importance and anxiety, all grounded in social identity theory and not previously examined in proximity literature (see Fig. 1 for conceptual model). The importance of in-group acceptance is the extent to which a person's identification with a group makes up their own self-image (Luhtanen and Crocker 1992; Tajfel 1982; Tajfel and Turner 1979). In-group research has been shown

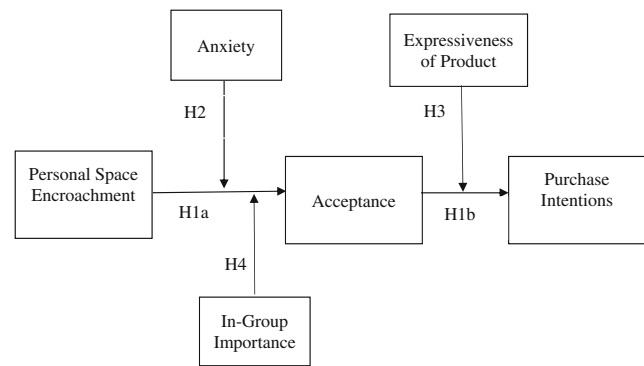


Fig. 1 Conceptual model with moderators

to moderate the positive relationship between crowding and safe product choices, such that when the crowd is perceived to be made up of in-group members, the positive relationship is weakened (Maeng et al. 2013). In terms of anxiety, select research has shown crowding can cause anxiety (Maeng et al. 2013) and social anxiety can trigger insecurities when a shopper is faced with an attractive service provider (Wan and Wyer 2015). Despite these impactful articles, these research streams mostly examine social density as a function of crowding, rather than physical distance. Additionally, these research streams are silent on the influence of employee proximity on a shopper and the impact in-group importance and anxiety have on the relationship with acceptance when physical distance is examined. We address this gap by showing acceptance is higher when an employee is closer to a shopper. This relationship is strengthened when in-group inclusion is important to the shopper or when feelings of anxiety are high.

A third moderator, expressiveness of the product, is also examined in our research, addressing a fourth gap regarding the impact of product differences on the relationship between proximity and purchase intentions. Expressiveness is the degree to which a person feels the product expresses the self (Grewal et al. 2004). While research has examined certain product characteristics, such as merchandise quality, value perceptions (Baker et al. 2002; O'Guinn et al. 2015), and embarrassing products (Wan and Wyer 2015), we show how acceptance from physical proximity is most critical on purchase intentions when the product being purchased is of low expressiveness.

Our findings have noteworthy implications for theory and retailers, indicating that if retailers seek to increase customers' felt acceptance and purchase intentions, even employees stocking the shelves can have a positive impact through their spatial proximity to shoppers; however, this is more likely to occur when the product is seen as less expressive. Additionally, proximity can buffer the negative consequences of shopper anxiety in a purchase situation, which is likely contrary to how employees are currently being trained. Our findings show it is in these anxious purchasing situations that an employee being in close physical proximity can lead to

positive outcomes. Finally, our findings show when in-group importance matters to consumers, employee proximity will have the most impact. In-group importance might be strongest with customers of grassroots start-up companies or the most loyal customers to an organization, who have a stronger sense of community (Lee et al. 2006). The findings of this research help to contextualize situations when shoppers might flee an employee encroachment situation and when they would stay.

Literature review and hypothesis development

Personal space and the shopper's intentions

Research in store atmospherics has highlighted the impact of social factors, such as the presence of a retail employee (Baker et al. 2002; Grewal et al. 2003) and crowding (Eroglu and Machleit 1990; Eroglu et al. 2005; Grewal et al. 2003; O'Guinn et al. 2015), on purchase intentions. However, this literature does not examine the role of an employee's physical proximity to the shopper. Purchase intentions are the likelihood that a shopper will purchase the product in a given shopping situation. Purchasing intentions depend on the situation and context, and can change over time from purchase to purchase (Whitaker 1978).

The current service literature sheds some light on the plausible nature of the relationship between proximity and purchase intentions, yet it leaves directionality uncertain. For example, service research has shown closer personal space may result in more favorable reactions, such as feelings of attachment, involvement, trust, warmth (Mehrabian 1971), genuineness (Hornik 1992), and positive evaluations in the context of a service encounter (Hornik 1992; Price et al. 1995); however, the reaction could also be negative, depending on the context of the service encounter (Hornik 1992; Mehrabian 1971; Price et al. 1995). Price et al. (1995) found closer personal space with a dental hygienist led to lower affect than with a surgical nurse. Many studies (e.g., Gallace and Spence 2010; Hornik 1992; Levav and Argo 2010) involve touch as part of personal space encroachment and do not examine personal space encroachment by itself. Past research, such as that noted above, has mostly entailed investigating physical space in high-service situations that involve touching, talking, more intimacy, and longer contact time, as opposed to a retail setting where personal space can be invaded without any of these other forms of encroachment and the purchase situation can be a shorter time frame. Argo et al. (2005) found shoppers do not like to be alone in a retail store, but the presence of another shopper can emotionally impact a person in both negative and positive ways.

While research suggests a relationship between proximity and purchase intentions, the disparate findings leave the directionality uncertain. Social identity theory would suggest the

directionality is dependent on how accepted the shopper feels in the situation. Shoppers' feelings of acceptance should lead to positive outcomes, whereas non-acceptance feelings should lead to negative outcomes. We identify and test several moderators (i.e., anxiety in the purchase situation, in-group importance, and the expressiveness of the product) to identify when proximity will most likely lead to a positive influence on acceptance and when acceptance will lead to increased purchasing intentions. To this end, we first describe social identity theory and then the influence of each proposed moderator.

Social identity theory and acceptance

Retail centers embody an identity that becomes a collective assertion for those who shop there (Miller et al. 1998). Shoppers select a store because it matches their preferences; other shoppers and employees will be similar and like-minded to the self. These shoppers and employees will also likely be from the same community and share similarities and social groups (Koo et al. 2014; Martineau 1958). As our research examines social interactions in a retail setting that personify self-identities, we use social identity theory to build the conceptual model. Social identity theory helps explain a positive influence of physical encroachment on purchase intentions through feelings of acceptance, or being free from the fear of being rejected (Branscombe et al. 1999). According to social identity theory, as people who are perceived to be similar to oneself move physically closer, one's feelings of acceptance and identity will increase (Kurzban 2001). A person chooses a store they feel most matches their own identity, and store personnel are an important—if not the most important—factor in creating a store image. An employee of the store is the personification and extension of that store image (Martineau 1958), much like a spokesperson is the personification of a brand (Fleck et al. 2014). As such, a person will feel employees are similar to the self and other group members (or part of their “in-group”), and a person is not likely to place an employee in the out group. As the shopper recognizes an employee as part of their in-group, acceptance will increase as the employee gets physically closer. There will be higher levels of social acceptance as expressed through increased intimacy when people get physically close (Vine 1982).

The relationship between acceptance and purchase intentions can be explained through identity conflict. Identity conflict occurs when a person fears being rejected, and a person will act in accordance to the preferred identity as a form of impression management (Branscombe et al. 1999; Hogg and Turner 1987; Tajfel and Turner 1979). A person who feels identity conflict with a purchase may not make a purchase or might feel post-purchase cognitive dissonance. Also, disloyalty can occur if a person feels disrespected or rejected (Branscombe et al. 1999), which may transfer to disloyalty to the store in terms of purchases made. Therefore, when a

person feels more accepted, their purchase intentions should increase because there is no immediate threat to their identity, nor do they have dissonance about their intended purchase.

It is the mediation of acceptance that explains the relationship of personal space encroachment to purchase intentions to be positive (i.e., closer personal space leads to greater acceptance; higher acceptance leads to increased purchase intentions), which is counterintuitive to what one might assume. The employee is seen as part of the shopper's in-group and therefore does not lead to a felt negative reaction of decreased purchase intentions when examined through the mediation of acceptance. As such, the following hypothesis is put forth.

H1: Higher (vs. lower) levels of personal space encroachment by a retail employee will lead to (a) increased acceptance, which leads to (b) increased purchase intentions. Furthermore, acceptance mediates the personal space–purchase intentions relationship.

Anxiety, in-group importance, and expressiveness of the product as boundary conditions

Anxiety Anxiety is defined as a feeling of discomfort associated with worry about the purchasing situation (Dube and Morgan 1996; Lau-Gesk and Meyers-Levy 2009; Luce 1998). Feelings of anxiety are investigated as a moderator on the relationship between personal space encroachment and acceptance to determine when proximity issues might have a positive versus negative influence. As proposed in H1a, proximity increases acceptance feelings due to increased feelings of intimacy (Vine 1982) and identity (Kurzban 2001) when shopping. We expect these feelings will be especially important in highly anxious situations where anxiety could lead to negative purchasing outcomes (such as abandoning the purchasing situation altogether), as a person might want to flee the situation (Altman 1975). We propose it is in highly anxious situations that consumers become most aware of situational factors in the purchasing environment, such as the proximity of an employee. The proximity of the employee should mitigate negative feelings that could arise from an anxious purchase situation since it is in these situations consumers have a heightened awareness of the environment, and their need for acceptance is increased (Smith et al. 1999). In these highly anxious situations, a physically close employee being a member of their in-group should lead to increased feelings of acceptance in comparison to when an employee is farther away in an anxious purchasing situation. When the employee is farther away in these anxious purchasing situations, the customer is unlikely to feel in-group membership with an employee, and acceptance feelings should decrease.

H2: There will be a positive interaction of personal space encroachment and anxiety on acceptance; the personal space–acceptance relationship will be stronger when anxiety is high compared to low anxiety purchasing situations.

Expressiveness The expressiveness of the product is used as a moderator for the relationship between acceptance and purchase intentions. As noted previously, the expressiveness of the product is the degree to which a person feels the product expresses the self or communicates to others what kind of person they are (Grewal et al. 2004). Understanding product-related emotions is important, as they can influence shopping behavior (Menon and Kahn 2002) and judgments about the situation (Dube and Morgan 1996). Additionally, the expressiveness of the product plays a part in the social identity function (Grewal et al. 2000; Shavitt 1990), and is considered part of a social process if a shopper perceives the product as a social entity (Belk 1988; Grewal et al. 2000). Social identity theory suggests a shopper is less likely to purchase a product that is incongruent with their social identity (Branscombe et al. 1999; Hogg and Turner 1987).

Since products play a part in defining and portraying the self (Belk 1988; Grewal et al. 2000), less expressive products have a lower likelihood of communicating and portraying to others what kind of person the shopper is. This could lead to shoppers feeling more of a threat to their identity with a less expressive product because less expressive products do not accurately portray to others who the shopper is (Belk 1988). It is in these situations that employee proximity can have the biggest impact because shoppers are worried about threats to their identity. Increased feelings of acceptance from proximity could attenuate the negative impact from a potential identity threat. Stated another way, the less expressive a product is, the more impactful acceptance becomes in relation to purchase intentions. Thus:

H3: There will be a negative interaction of acceptance and expressiveness on purchase intentions; the acceptance–purchase intentions relationship will be stronger for less expressive products compared to highly expressive products.

In-group The importance of the in-group defines the extent to which a person's identification with a group makes up their own self-image (Luhtanen and Crocker 1992; Tajfel 1982; Tajfel and Turner 1979). Social identity theory suggests feelings of acceptance and identity will increase to varying degrees as people get closer to each other, based upon the importance of the in-group (Kurzban 2001). Therefore, when in-group importance is high, an employee being physically close

should lead to greater acceptance than when the employee is far away. This effect should be attenuated when in-group importance is low. When in-group importance is low, a shopper does not define the self through identification with others, holding less importance on being accepted in accordance with social identity theory. Therefore, the employee's distance should not impact feelings of acceptance as strongly when in-group importance is low, but personal space encroachment should lead to more acceptance feelings when in-group importance is high, showing a moderation effect. This leads to a fourth and final hypothesis:

H4: There will be a positive interaction of personal space encroachment and in-group importance on acceptance; the personal space–acceptance relationship will be stronger for those who place more importance on being in an in-group compared to those with low in-group importance.

Overview of studies

We take a four-study approach to test these hypotheses. Study 1 uses a field study to show the differential influence of proximity's influence on purchase intentions across expressive and non-expressive products. Study 2 examines the effect of personal space encroachment on purchase intentions as mediated through acceptance, while also examining the moderators of anxiety on the front of the model and expressiveness on the back end. Study 3 generalizes our model and findings through the inclusion of additional products. Study 4 examines social identity theory as the theoretical framework by showing acceptance as the mediator and demonstrating how acceptance mediation effects on purchase intentions are heightened when in-group needs are high, but are lessened when in-group needs are low. Embarrassing products were used in Study 4 to increase the amount of felt threat (Brehm 1966) from invasion to show acceptance can occur even in situations where personal space is most likely desired, whereas less embarrassing products were used in the other studies to show the generalizability of the results.

Study 1: field experiment of nail polish and makeup remover

The purpose of Study 1 was to test the differential effects of physical proximity on purchase intentions in a field study on two products: one expressive and one non-expressive. As such a 2 (personal space encroachment: low vs. high) X 2 (product: non-expressive vs. expressive) between subjects design was used.

Pretest

We conducted a pretest to find two products for use in the field study. Online panel participants were asked to think of and list a product they had purchased in the last 7 days and to rate the product on an expressiveness scale (this product is an instrument of my self-expression; this product plays a critical role in defining my self-concept; people who buy this item are much more like me than people who don't (Grewal et al. 2004; Sirgy et al. 1997); all items are available in Table 1). Products from this list were then used to create a pool of products for 50 panel participants to rate on the expressiveness construct (1–7 scale). Ten products were listed: mascara, makeup remover, eyeshadow, tweezers, foundation, facewash, lipstick, chapstick, nail polish, and nail polish remover. Based on the products selected for the expressiveness pretest, only females participated in the pretest.¹ Participants listed nail polish as the most expressive (mean = 4.05), and this was significantly different than makeup remover, the least expressive product (mean = 2.99, $p < .001$). Both of these products also had relatively smaller SDs compared to other expressive/non-expressive rated items, thus these two products were selected for use in the field study.

Procedure

The data collection was conducted over 8 days in the same store by the same researcher. The researcher recorded only participants who met certain criteria in order to increase the amount of control from the field setting. Only adults shopping by themselves and not on their phone were used. The researcher was dressed as a store employee. Once a shopper stopped at a nail polish or makeup remover product, the researcher would either stay far from the shopper (10 ft) or move physically close to the shopper (12 in.) (Aiello and Aiello 1974), alternating back and forth between conditions. The researcher attempted to make the approach to the shopper as similar as possible given the field study setting and did not physically touch, make eye contact with, speak to, or acknowledge the other shopper. The date, time of day, gender, race, product and purchase intentions (if the shopper left the product category area with the product or not) were recorded.

Results

The dataset consisted of 76 shoppers who shopped for nail polish or makeup remover between 10 am and 4 pm, consisting of all females. A logit regression was used for analysis, and the

¹ Males and females often see the expressiveness dimension of the same product differently; thus we focus on one gender in Study 1 to minimize the variance in ratings.

Table 1 Constructs, items, and reliabilities

Construct and definition	Items	Reliability study 1/2/3/4
Purchase Intentions	(Oliver and Swan 1989)	na
The likelihood of the shopper purchasing the product	<ul style="list-style-type: none"> • Not at all likely / very likely • Non-existent / existent • Improbable / probable • Impossible / possible • Uncertain / certain • Probably not / probably 	.97 .95 .95
Acceptance	(Adapted from definition by Branscombe et al. 1999)	na
Being free from specific threat of acceptance (or from fear of being rejected)	<ul style="list-style-type: none"> • I felt I might be rejected because of my item choice (r) • I felt that others might not accept me based on this item (r) • I thought others might not admit me as one of their own because of this item choice (r) 	.97 .93 .94
Physical Proximity	(Altman 1975)	na
The invasion of personal space, or the invisible boundary surrounding a person	<ul style="list-style-type: none"> • Very distant / very close • Very far away / very near • Not close / very close by 	.99 .99 .99
Anxiety	(Lau-Gesk and Meyers-Levy 2009; Dube and Morgan 1996; Luce 1998)	na
A feeling of discomfort associated with worry about the situation	<ul style="list-style-type: none"> • Anxious • Nervous • Tense 	.96 .96 .93
Expressiveness of Product	(Grewal et al. 2004; Sirgy et al. 1997)	na
Degree to which a person feels the product expresses the self	<ul style="list-style-type: none"> • This product is an instrument of my self-expression. • This product plays a critical role in defining my self-concept. • People who buy this item are much more like me than people who don't 	.77 .77 .77
Importance of In-group	(Luhtanen and Crocker 1992)	na
Extent to which a person's identification with a group makes up their own self image	<ul style="list-style-type: none"> • Overall, the groups I belong to have a lot to do with how I feel about myself • The social groups I belong to are an important reflection of who I am • The social groups I belong to are important to my sense of the kind of person I am • In general, belonging to social groups is an important part of my self-image 	na na .91

All items asked on 1–7 Likert type scale

date as well as time of day were controlled for, as the purpose of shopping trips may vary by time of day and day of week and impact behavior (Yalch and Spangenberg 1990). The interaction of physical proximity and product on purchase intentions was found to be significant ($\beta = 3.47$, $s.e. = 1.28$, $p < .01$). To examine this interaction, the data were split by product to examine the effects of proximity on purchase intentions for each product. For nail polish, a marginally significant (Boulding et al. 1993) and negative main effect was evident ($\beta = -.16$, $s.e. = .84$, $p = .055$; see Fig. 2, Panel A). As the researcher got closer to shoppers looking at nail polish, purchase intentions decreased, meaning *more* consumers “did not buy” (75%) and *fewer* consumers “did buy” (25%) than when the researcher was far away (47 and 53%, respectively). A significant and positive effect was evident for makeup remover ($\beta = 2.68$, $s.e. = 1.30$, $p < .05$; see Fig. 2: Panel B). As the researcher got closer to shoppers who were looking for makeup remover, purchase intentions increased, meaning *fewer* consumers “did not buy” (11%) and *more* consumers “did buy” (89%) than when the researcher was far away (32% vs. 68%, respectively). When assessing the effect sizes within

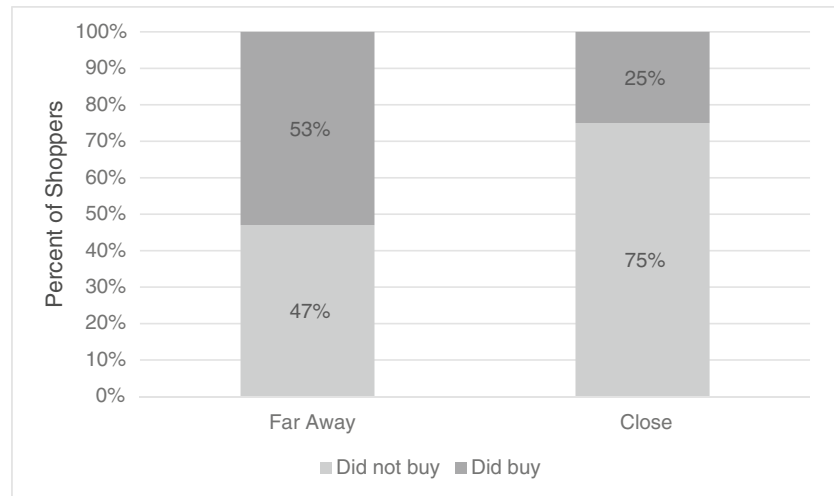
each product category, a larger odds ratio in the less expressive product (14.58) than the more expressive product (.20) illustrates that employee proximity had a stronger impact on purchase intentions when the product was less expressive (i.e., makeup remover).

Discussion

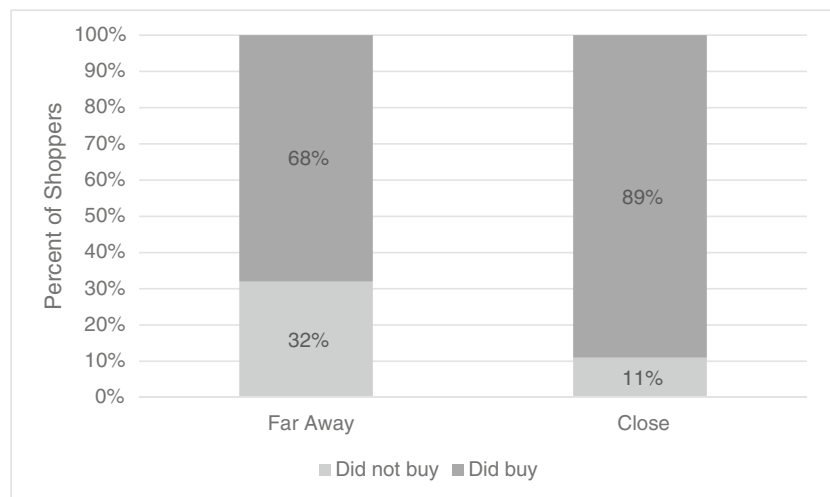
Study 1 tested whether physical proximity influenced purchase intentions differently for expressive and non-expressive products in a real world setting. The results of the field study show that an employee being physically closer to a shopper can increase purchase intentions when the product is non-expressive, as with makeup remover. However, if the product is perceived as expressive, such as nail polish, the closer proximity has an opposite effect, leading to a decrease in purchase intentions. These results support the differing effect employee proximity can have (through acceptance as tested in other studies) on purchase intentions for different types of products. Additionally, proximity to the shopper had a stronger impact on purchase intentions when the product

Fig. 2 Graph of physical encroachment (far vs. close) on the percentage of customers who did not buy/did buy the product (Study 1)

A: Nail polish (expressive product)



B: Make up remover (non-expressive product)



was less expressive as seen through the larger odds ratio (14.58 for makeup remover and .20 for nail polish). The effect size is consistent with ideas put forth that the relationship between proximity and purchase intentions as seen through acceptance is stronger when the product is less expressive. Given that our field study did not measure acceptance feelings, this assertion is tested more directly in Studies 2–4.

Study 2: anxious shoppers and product expressiveness

The purpose of Study 2 was to test the effect of personal space encroachment on purchase intentions through feelings of acceptance using an online experiment. Social identity theory suggests acceptance will mediate the relationship between personal space encroachment and purchase intentions seen

in Study 1. Additionally, Study 2 examines two moderators to test the boundary conditions of personal space encroachment. These moderators were measured variables whereas physical proximity was manipulated for a one-factor (personal space encroachment: low vs. high) between subjects design.

Procedure

A total of 70 participants took the survey on MTurk. Participants were given \$0.15 for their participation. Due to the nature of the product being purchased in the scenarios (nail polish), all of the participants were female; 61.4% were between the ages of 21–40, and 31.4% were between the ages of 41–60.

The survey was available on the Qualtrics platform with a link on MTurk. Participants were given a brief overview of the study and asked for their consent. Once participants agreed to the conditions, they were given instructions and randomly

shown one of the two manipulated scenarios (scenarios available in Table 2). Participants were first asked to answer survey questions regarding purchase intentions (not at all likely/very likely; non-existent/existent; not probably/very probably; not possible/very possible; not certain/very certain; and probably not/probably) (Oliver and Swan 1989) and then acceptance (I felt I might be rejected because of my item choice (r); I felt that others might not accept me based on this item (r); I thought others might not admit me as one of their own because of this item choice (r)) (Branscombe et al. 1999). Both purchase intentions ($\alpha = .97$) and acceptance ($\alpha = .97$) showed good reliability and were collapsed to create mean scores. The anxiety scale used three items of anxious, nervous, and tense (Dube and Morgan 1996; Lau-Gesk and Meyers-Levy 2009; Luce 1998) while participants were shopping for the product which had a high reliability ($\alpha = .96$); these items were collapsed to create a mean score for the first moderator variable. The second moderator variable of expressiveness consisted of three items (this product is an instrument of my self-expression; this product plays a critical role in defining my self-concept; people who buy this item are much more like me than people who don't) (Grewal et al. 2004; Sirgy et al. 1997), which showed good reliability ($\alpha = .77$), and a mean score was created (all items and reliabilities are available in Table 1; descriptive statistics and correlations available in Appendix Table 4). An expressive product (nail polish) was used in this study to replicate one of the products used in Study 1; however, as noted in the pretest for Study 1, consumers often see the expressiveness dimension of the same product differently. Thus, consumers' perceptions of the product's expressiveness are included as a moderator in all our studies as it helps explain when feelings of acceptance will have a stronger/weaker impact on purchase intentions.

The manipulation checks for personal space encroachment (very distant/very close; very far away/very near; not close/very close by) showed good reliability ($\alpha = .99$); thus a mean score

was created. Participants who were farther from the employee in the scenario felt lower personal space encroachment ($N = 32$; $M_{\text{employee far}} = 1.81$) than those who were closer to the employee ($N = 38$; $M_{\text{employee close}} = 6.49$, $F(1,68) = 4.52$, $p < .001$).

Results

PROCESS for SPSS (Hayes 2008) was used for analysis in Studies 2–4. According to recent methodological research, a direct effect between the independent variable (IV) and the dependent variable (DV) is not necessary for testing mediated effects; the only requirement for mediation is a significant indirect path. PROCESS tests for this indirect path, which was the first reason for using this analysis approach. Second, the PROCESS analysis examines causal path relationships between many variables at the same time, giving a more complete depiction of the variables of interest as well as increasing power in comparison to the Sobel test (Zhao et al. 2010). Finally, the PROCESS macro allows researchers to see if competing mediation paths might exist between the IV and the DV, which helps build our theoretical knowledge between constructs. For these reasons, PROCESS was used in our analyses.

Hypothesis 1a predicts higher levels of personal space encroachment will have a positive relationship with acceptance, whereas H1b predicts higher levels of acceptance will increase purchase intentions. To test these hypotheses the data were examined using model 22 of PROCESS for SPSS (Hayes 2008) with personal space encroachment (low vs. high) as the IV (variable X), acceptance as the mediator (M), and purchase intentions as the DV (Y). Anxiety was used as the moderator for physical encroachment on acceptance effect (variable W) and expressiveness was a moderator on the relationship between acceptance and purchase intentions (V). The model summary showed to be a significant model ($F(3, 66) = 9.48$, $p < .001$).

Table 2 Scenarios for Study 2

Manipulation	Scenarios for Study 2
Low personal space encroachment	Imagine that you have run out of a few items and need to make a shopping trip to a local store. You go to a pharmacy (e.g., a Walgreens, CVS, Rite-Aid, etc.) that you frequent with a list of items to purchase. You start to walk around the store to find and select your items. As you get to the first item on your list, nail polish, no employee is physically close to you. As you continue looking for your item, you check and are still alone in the area.
High personal space encroachment	Imagine that you have run out of a few items and need to make a shopping trip to a local store. You go to a pharmacy (e.g., a Walgreens, CVS, Rite-Aid, etc.) that you frequent with a list of items to purchase. You start to walk around the store to find and select your items. As you get to the first item on your list, nail polish, an employee has come to look at the same product you are at and is standing very close to you. As you continue looking for your item, you check and the employee is still very close to you.

More specifically, the results showed a difference between low and high space encroachment on felt acceptance levels with those farther from the employee (low personal space encroachment) feeling less acceptance than those where the employee was close (high personal space encroachment). Personal space encroachment had a significant positive relationship with acceptance ($\beta = 1.17$, $t = 3.33$, $p < .01$) supporting H1a; the closer an employee got, the more accepted the shopper felt.

Hypothesis 1b states higher levels of acceptance will increase purchase intentions, which was supported by the data through a significant and positive relationship ($\beta = .63$, $t = 3.33$, $p < .01$). Due to the increased acceptance felt from less personal space, the shopper had higher intentions to purchase the product.

The moderation hypothesis of anxiety proposes that the relationship between physical encroachment and acceptance will be stronger when anxiety feelings are higher. The interaction of physical encroachment and anxiety on acceptance was positive and significant ($\beta = .63$, $t = 2.38$, $p < .05$; see Fig. 3, Panel A).² A floodlight analysis was used to test the ranges of significance of the measured moderator variable (anxiety) on physical encroachment's relationship with acceptance. Using the Johnson-Neyman technique, all values of anxiety for which the physical encroachment– acceptance relationship is or is not significant are examined. This floodlight analysis (Spiller et al. 2013) showed a significant difference in acceptance feeling across levels of physical encroachment for any anxiety feelings of 1.64 (s.e. = .34, $p = .05$) or higher, but not for any anxiety score less than 1.64. The more anxious a person felt, a closer employee led to higher acceptance feelings than when employees were farther away, supporting H2.

The interaction of acceptance and expressiveness on purchase intentions was negative and significant as expected ($\beta = -.56$, $t = -3.44$, $p < .001$; see Fig. 4, Panel A). A floodlight analysis was again used to examine significance of the acceptance to purchase intentions relationship at all values of the moderator. The analysis showed a significant effect of acceptance for any expressiveness value of 3.57 (s.e. = .14, $p = .05$) or lower (acceptance had a stronger, positive relationship with purchase intentions the less expressive the item was rated), but not for any expressiveness rating over 3.57. Feelings of acceptance led to greater purchase intentions the less expressive a product is perceived, supporting H3.

Acceptance is conceptualized as a mediator between personal space encroachment and purchase intentions. The indirect effect of personal space encroachment on purchase intentions through acceptance was significant when anxiety in the purchase situation was moderate to high and when the

expressiveness of the product was moderate to low (see Appendix Table 5 for conditional indirect effects at values of both moderators). After accounting for the proposed mediator of acceptance and moderators, a direct relationship between personal space encroachment and purchase intentions did not exist. These results suggest full mediation (Zhao et al. 2010) and are consistent with the role of acceptance in social identity theory.

Discussion

The results from Study 2 support hypotheses H1a, H1b, H2, and H3 (H4 was not tested here). Higher levels of personal space encroachment led to increased acceptance which has a positive relationship to purchase intentions. Consistent with social identity theory (Kurzban 2001), as the employee got closer, the shopper felt more accepted, which increased purchase intentions. This relationship was moderated by the shopper's anxiety in the purchase situation and the perceived expressiveness of the product. Proximity had the greatest impact when customers were anxious (closeness buffered the negative effect that could occur from anxiety) and when expressiveness was low (as expressiveness increased, higher levels of acceptance did not lead to greater purchase intentions). The direct effect of physical encroachment to purchase intentions is not significant after the acceptance mediator and moderators are accounted for.

Study 3: generalizability of conceptual model

The purpose of Study 3 was to replicate the findings in Study 2 with more diverse products to show the generalizability of the results. Employee proximity was manipulated as in Study 2 for a one-factor (employee encroachment: low vs. high) between subjects design; however, in this study respondents listed a product they had purchased recently (rather than a product listed in the scenario), and they rated this product on how expressive it was to them.

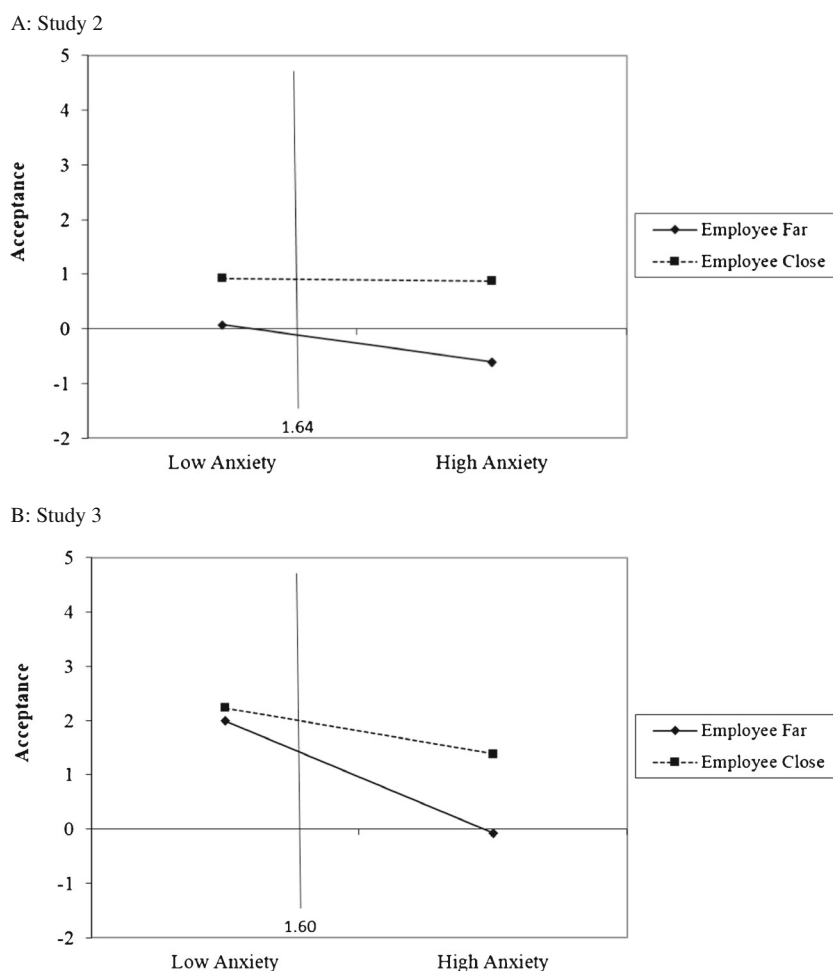
Procedure

A total of 90 participants took the survey on MTurk. Participants were given \$0.25 for their completion of the survey. In the sample, 47.8% of the participants were male, 67.8% were between the ages of 21–40, and 22.2% were between the ages of 41–60.

The procedure was similar to Study 2. Participants were first given a brief description of the survey and asked for their consent. Once participants agreed to the conditions, they were given instructions and randomly shown one of the two manipulated scenarios (Table 2 shows scenarios used in Study 2, which are similar to those used in Study 3 except a product

² Physical encroachment has a positive main effect on anxiety [$F(1,68) = 43.36$, $p < .001$; $M_{\text{far}} = 1.48$, $M_{\text{close}} = 3.22$], although multicollinearity is not problematic (tolerance = .61, VIF = 1.64).

Fig. 3 Interaction of personal space and anxiety on acceptance



was not named). The same measures for all constructs were used in Study 3 as previously outlined and as available in Table 1.

While on the scenario screen, participants were asked to think of an item they had shopped for in a store in the past 7 days rather than given a product as in Study 2 (items were not restrained to any type of store). Participants wrote their product selection in, and these selections included a broad range of items like feminine products, hygiene products, makeup items, candy and candy bars, boxers, backpacks, and cereal, among other items. After naming their product and reading the scenario, participants later rated their chosen product on three items about the expressiveness of the product (same items as in Study 2; Grewal et al. 2004; Sirgy et al. 1997). The items showed good reliability ($\alpha = .77$), and a mean score was created. Participants answered the remaining survey items based on their chosen product and given scenario.

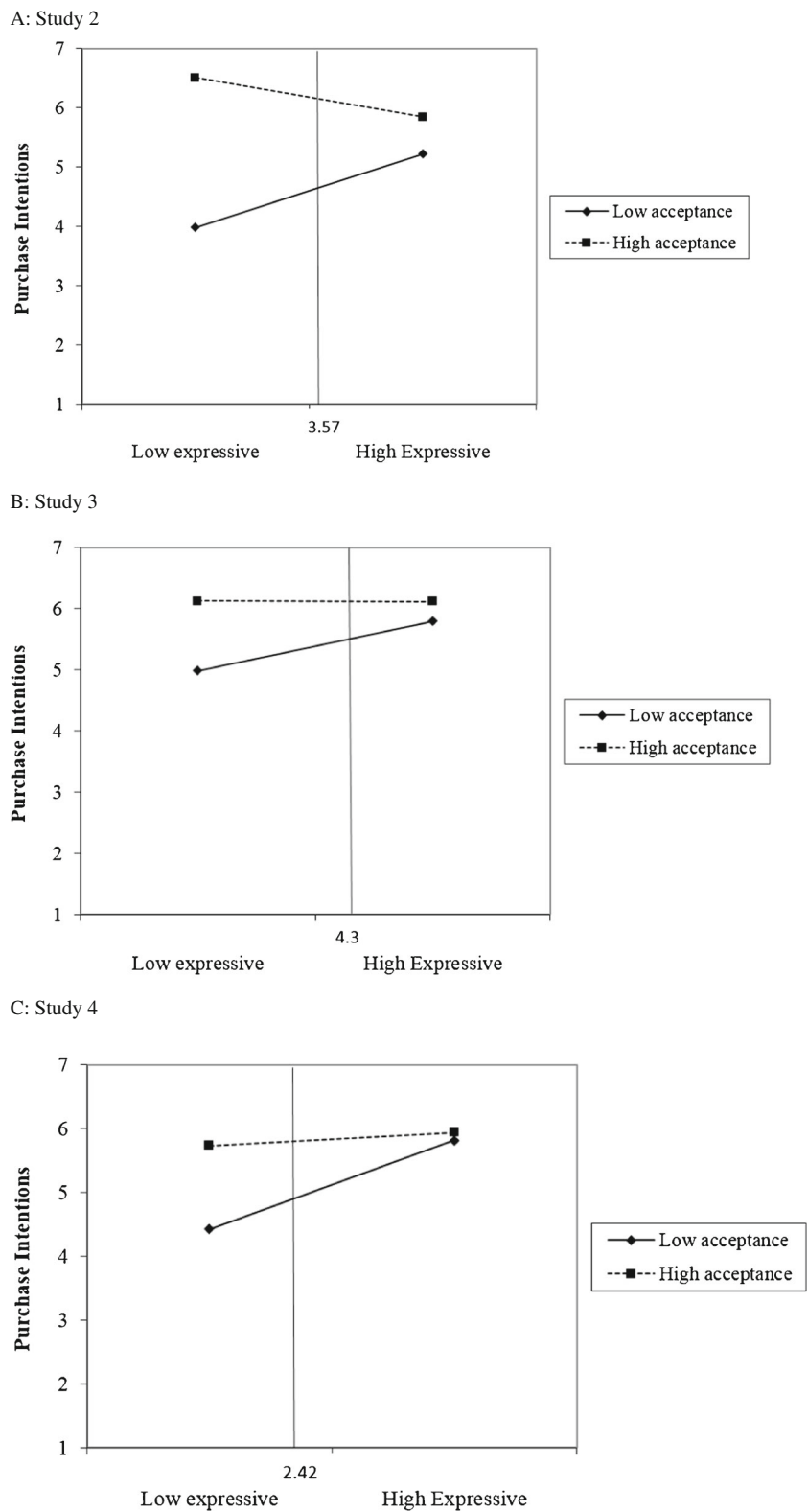
Manipulation checks were conducted on the data to ensure the manipulations were adequately perceived. The items for the personal space manipulation check had good reliability ($\alpha = .99$) and were combined to create a mean score.

Participants who were farther from the actor felt lower personal space encroachment ($N = 41$; $M_{\text{employee far}} = 1.98$) than those who were closer to the actor ($N = 49$; $M_{\text{employee close}} = 6.56$, $F(1,88) = 10.18$, $p < .001$).

Results

The data were examined using model 22 of PROCESS for SPSS (Hayes 2008) with personal space encroachment (low vs. high) as the IV, acceptance as the mediator (M), purchase intentions as the DV (Y), and expressiveness as the “V” moderator of acceptance on purchase intentions. Anxiety was again used as the “W” moderator of physical encroachment on acceptance. The model summary showed to be significant ($F(3,86) = 18.51$, $p < .001$). The effect of physical encroachment to acceptance was positive and significant ($\beta = .85$, $t = 3.57$, $p < .001$), consistent with Study 2 and supporting H1a. The effect of acceptance to purchase intentions was also positive and significant ($\beta = .25$, $t = 2.73$, $p < .01$), supporting H1b. As seen in Study 2, the indirect effect was significant for moderate to high levels of anxiety and moderate to low levels of

Fig. 4 Interaction of acceptance and expressiveness on purchase intentions



expressiveness (see Appendix Table 5). Additionally, personal space encroachment did not have a direct relationship with purchase intentions ($\beta = .02$, $t = .08$, $p = n.s.$; 95% CI: $-.51, .56$), showing what is comparable to full

mediation as outlined by Baron and Kenny (1986) and consistent with Study 2.

As in Study 2, the interaction of physical encroachment and anxiety was positive and significant ($\beta = .33$, $t = 2.31$,

$p < .05$; see Fig. 3, Panel B).³ A floodlight analysis examined at what values of anxiety the relationship between physical encroachment and acceptance was significant. Physical encroachment impacts acceptance for any anxiety rating 1.60 or higher (s.e. = .55, $p = .05$), but not any anxiety ratings lower than 1.60. As the person felt more anxious purchasing their product, an employee getting closer had higher feelings of acceptance than when the employee was farther away, again supporting H2 and the findings in Study 2.

The interaction of acceptance and expressiveness on purchase intentions was negative and marginally significant (Boulding et al. 1993) as expected ($\beta = -.10$, $t = -1.83$, $p = .07$; see Fig. 4, Panel B). A floodlight analysis was again used to test the ranges of significance of the measured moderator variable (expressiveness of product) on acceptance's relationship with purchase intentions. The Johnson-Neyman technique showed a significant effect of acceptance for any expressiveness feelings of 4.30 (s.e. = .10, $p = .05$) or lower (i.e., the positive relationship between acceptance and purchase intentions was stronger for those who felt the product was less expressive), but not for any expressiveness score greater than 4.30, re-supporting the results found in Study 2 and H3. When a product was felt to be less expressive to the shopper, acceptance has a greater and positive relationship with purchase intentions than when the product was deemed to be more expressive.

Discussion

Study 3 replicates the findings from Study 2 by showing when an employee is closer to a shopper the shopper feels more acceptance than when an employee is farther away, re-supporting H1a. This increase in feelings of acceptance leads to greater purchase intentions (H1b). The role of anxiety as a boundary condition on the proximity to acceptance effect is re-confirmed (H2). Once again, an employee's close proximity to the shopper can mitigate the negative effects from a shopper's anxious feelings in the purchase situation. Additionally, the findings from this study confirm the boundary conditions on this effect by showing with low expressive products, shoppers acceptance feelings are critical for increased purchase intentions. If the product is highly expressive, the relationship between acceptance and purchase intentions is weakened, which supports H3. These results extend prior work on social identity theory (Branscombe et al. 1999; Kurzban 2001; Hogg and Turner 1987; Tajfel and Turner 1979) by

showing boundary conditions to when proximity and acceptance are most critical (i.e., when the shopper is anxious and the product being purchased is less expressive).

As our interest is in when customers' feelings of acceptance get heightened and lead to a positive impact on purchase intentions, we conducted Study 4 to further examine the mediating role of acceptance and a boundary condition to its impact on purchase intentions through in-group importance. In-group importance also directly relates to the theoretical framework used in this study; thus Study 4 more directly tests the appropriateness of social identity theory as our theoretical framework.

Study 4: importance of in-group inclusion

The question still exists as to whether our conceptual model is applicable in situations where personal space might be most desired. Thus, Study 4 uses written scenarios and personal lubricant as the product to extend findings to additional products, such as embarrassing products, which were not listed by many respondents in Study 3. Study 4 tests in-group importance as the moderator on the front of the model, while controlling for anxiety since anxiety was shown to impact consumers' responses from employee encroachment in Studies 2 and 3; product expressiveness was again used as a moderator on the back of the model. Study 4 manipulated employee proximity using a one-factor (personal space encroachment: low vs. high) between subjects design, while measuring respondents' desires for in-group importance and expressiveness of the product.

Pretest

We predicted that when in-group importance is high, proximity will more strongly influence acceptance. As our study scenarios used an employee as the physical encroacher, the pretest ensured participants felt an employee was part of their in-group, therefore allowing the relationship between proximity and acceptance to be seen. Participants ($n = 56$) were given scenarios similar to Study 2 in which they were told either an employee or another shopper was doing the encroaching. Participants answered four Likert type questions on a seven-point scale to measure perceptions of the target person being in their in-group: the person in the scenario probably has a lot in common with me; I feel like the person in the scenario was similar to me (Van Dolen et al. 2007); I would consider myself and the person in the scenario as like-minded; and I probably share some personality traits with the person in the scenario. The items had a good reliability ($\alpha = .90$) and were combined to create a mean score.

³ Physical encroachment has a marginally positive main effect on anxiety [$F(1,88) = 3.83$, $p = .054$; $M_{\text{far}} = 2.24$, $M_{\text{close}} = 2.99$], although multicollinearity is not problematic (tolerance = .96, VIF = 1.04).

Participants felt an employee in a store was moderately part of their in-group ($M = 3.97$).⁴

Procedure

A total of 61 participants took the survey on MTurk. Participants were given \$0.75 for their completion of the survey. In the sample, 54.1% of the participants were male, 77% were between the ages of 21–40, and 14.8% were between the ages of 41–60.

The procedure was similar to Studies 2 and 3. Participants were first given a brief description of the survey and asked for their consent. Once participants agreed to the conditions, they were given instructions and randomly shown one of the two manipulated scenarios (similar to scenarios used in Study 2 as seen in Table 2, but with personal lubricant as the product). The same measures for all constructs were used in Study 4 as outlined in Studies 2 and 3 and as available in Table 1. Participants were also asked to rate how important belonging to an in-group is to them (i.e., the extent to which their identification with a group makes up their own self-image; Luhtanen and Crocker 1992). Participants were asked four items for in-group importance on a seven-point strongly disagree/strongly agree scale (overall, the groups I belong to have a lot to do with how I feel about myself; the social groups I belong to are an important reflection of who I am; the social groups I belong to are important to my sense of the kind of person I am; in general, belonging to social groups is an important part of my self-image) (Luhtanen and Crocker 1992); the items showed good reliability ($\alpha = .91$) and were collapsed to create a mean score. Participants were also additionally asked three items about the expressiveness of personal lubricant, which showed good reliability ($\alpha = .77$) and a mean score was created. The mean expressiveness of personal lubricant was 2.31 (on a five-point scale), showing participants largely found the product to be non-expressive, in contrast with nail polish used in Study 2 that was found to be more expressive (mean for nail polish was 3.07).

Manipulation checks were conducted on the data to ensure the manipulations were adequately perceived. The items for the personal space manipulation check had good reliability ($\alpha = .99$) and were combined to create a mean score. Participants who were farther from the actor felt lower personal space encroachment ($N = 34$; $M_{\text{EmployeeFar}} = 1.75$) than those who were closer to

the actor ($N = 27$; $M_{\text{EmployeeClose}} = 6.31$, $F(1,59) = 2.68$, $p < .001$).

Results

To test social identity as an appropriate theory through the acceptance mediator, the relationship between physical encroachment and acceptance was examined in shoppers who rated in-group importance as varying from low to high. We expected acceptance would be felt stronger for those consumers who place higher importance on in-group inclusion. For the back-end of the model, the relationship between acceptance and purchase intentions was examined with the expressiveness of the product as a moderator of this path, as was done in Studies 2 and 3 to replicate the findings for H3.

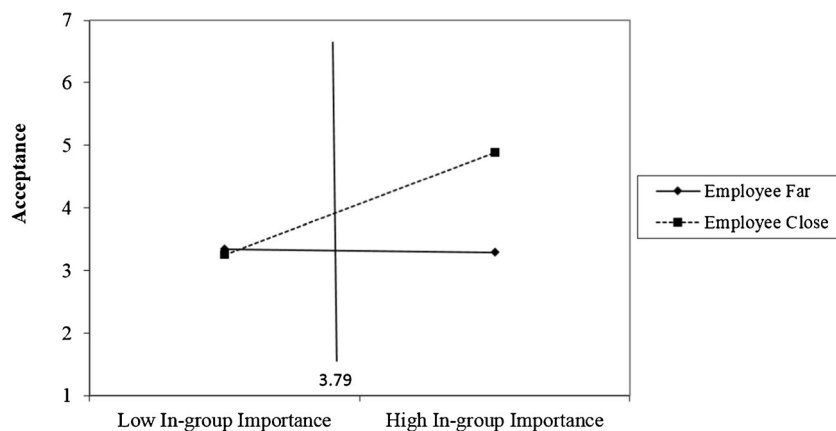
The data were examined using model 22 of PROCESS for SPSS (Hayes 2008) with personal space encroachment (low vs. high) as the IV, acceptance as the mediator, purchase intentions as the DV, in-group importance as the “W” moderator of proximity on acceptance, and expressiveness as the “V” moderator of acceptance on purchase intentions. The overall model summary was significant ($F(4, 56) = 15.09$, $p < .001$). Anxiety was used as a control and found to be significant ($\beta = -1.11$, $t = -7.70$, $p < .001$).⁵ The negative coefficient for anxiety illustrates the negative effect shoppers’ anxiety can cause in the purchase situation, which employee proximity buffered in Studies 2 and 3.

The effect of physical encroachment to acceptance was positive and significant ($\beta = .75$, $t = 2.26$, $p < .05$), replicating support for H1a, as was the interaction of personal space encroachment and in-group importance on acceptance ($\beta = .62$, $t = 2.61$, $p < .05$; see Fig. 5), showing a moderation effect as expected (examined further below with a floodlight analysis). The effect of acceptance to purchase intentions was also positive and significant ($\beta = .21$, $t = 2.57$, $p < .05$), replicating support for H1b. Physical encroachment led to an increase in purchase intentions as mediated through acceptance when in-group importance was moderate to high and expressiveness was moderate to low (see Appendix Table 5 for direct and indirect effects). However, personal space encroachment also had a direct and negative relationship with purchase intentions with acceptance in the model ($\beta = -.86$, $t = -3.06$, $p < .01$). The direct effect was only evident when in-group importance was moderate to low, which is in-line with social identity theory and the proposed relationships.

⁴ Participants were asked to rate both employees and other shoppers as part of their in-group. An employee and a customer do not differ in regards to feelings of in-group ($M_{\text{Employee}} = 3.97$, $M_{\text{Customer}} = 3.73$, $F(1, 54) = .03$, $p = .41$).

⁵ Physical encroachment has a positive main effect on anxiety [$F(1,59) = 5.63$, $p < .05$; $M_{\text{Far}} = 2.72$, $M_{\text{Close}} = 3.41$], but multicollinearity is not problematic (tolerance = .91, VIF = 1.10).

Fig. 5 Interaction of personal space encroachment and in-group importance on acceptance (Study 4)



The interaction of acceptance and expressiveness on purchase intentions was significant and in the expected direction ($\beta = -.24$, $t = -2.06$, $p < .05$; see Fig. 4, Panel C), showing that for less expressive products, feelings of acceptance are critical for customer intentions to purchase. This is consistent with H3 and previous results in Studies 2 and 3.⁶

To further examine the interaction of in-group importance and physical encroachment on acceptance (H4), the Johnson-Neyman technique was used to identify the ranges of in-group importance in which the simple effect of the personal space manipulation was significant. This floodlight analysis (Spiller et al. 2013) showed a significant positive effect of personal space encroachment for any in-group importance of 3.79 or higher ($SE = .33$, $p = .05$) (i.e., more acceptance if the employee was close), but not for any in-group importance score less than 3.79 (graph of interaction available in Fig. 5). Physical closeness raises feelings of acceptance when in-group importance is high. However, when in-group importance is low, the effect of changing physical distance has no impact on feelings of acceptance, supporting H4.

Discussion

Study 4 further examined the relationship between personal space encroachment and purchase intentions through the mediator of acceptance. Study 4 highlighted and confirmed the relationship between personal space and acceptance, showing when acceptance is and isn't impacted. The relationship between personal space and feelings of acceptance is reduced when a person is not concerned with in-group inclusion, as social identity theory would suggest (Kurzban 2001) and consistent with H4.

⁶ The Johnson-Neyman technique was also used to examine the moderation variable of expressiveness on the acceptance to purchase intentions relationship. This analysis replicates the results in Studies 2 and 3. This floodlight analysis (Spiller et al. 2013) showed a significant effect of acceptance on purchase intentions for any expressiveness feelings of 2.42 ($SE = .09$, $p = .05$) or lower, but not for any expressiveness score greater than 2.42.

When being part of an in-group is important, being physically close to the shopper leads to increased acceptance (H1a and H4). This supports social identity theory and shows managers that acceptance feelings from personal space encroachment are amplified when in-group inclusion is important to the shopper. The results from Study 4 also replicated the positive relationship between acceptance and purchase intentions (H1b) and showed feelings of acceptance are most critical when the product is less expressive to the shopper (H3).

General discussion

The findings of this research add to the understanding of physical proximity. Past research has not examined the impact of an employee's distance from the shopper, nor the impact on purchase intentions and the mechanisms responsible for the relationship. Additionally, proximity encroachments have not been examined by product type to examine the impact of personal space in regards to different products. Previous psychology research suggested a shopper's reaction would be to flee (Altman 1975; Barash 1973; Felipe and Sommer 1966; Goffman 1971; McDowell 1972; Patterson et al. 1971) and that shoppers would prefer an employee not stand so close to them while shopping. Service and consumer literature predicted the shopper could feel more favorable attitudes when there was talking, touching, or more intimacy involved (Hornik 1992; Mehrabian 1971; Price et al. 1995). However, previous research did not account for the effect of proximity absent of these personal contact situations, the importance of in-group inclusion to a shopper, feelings of anxiety, or the expressiveness of the product.

Across all four studies, personal space encroachment had a significant relationship with acceptance, consistent with social identity theory (Branscombe et al. 1999; Hogg 2003; Hogg and Terry 2000; Hogg et al. 1995; Kleinke 1986; Kurzban 2001; Turner et al. 1979; Williams 1997). It was in scenarios where an employee is physically closer to a shopper that participants felt greater acceptance, as predicted. As a shopper felt an employee was physically closer to them, acceptance levels

went up, which led to an increase in the likelihood a purchase would be made. While the psychology literature would suggest a shopper would feel discomfort and flee (Altman 1975; Goffman 1971) when faced with personal space encroachment, we find a shopper can react in positive ways (i.e., more acceptance and purchase intentions). This provides important insights for managers of stores, as it is counterintuitive to believe invasion of personal space could be helping. Our results consistently show an employee's being close to a shopper increases feelings of acceptance and acceptance increases purchase intentions. This is particularly valuable information for the current trend of retailers increasing aisle space (Retail Customer Experience 2010), which would prompt employees to give shoppers more space. However, this increased distance could cause feelings of anxiety, isolation, and less acceptance, resulting in lower purchases in the store.

Three moderators show when the proximity–purchase intentions relationship is most likely to occur and when acceptance is most important. First, the positive impact on acceptance from proximity was heightened when a shopper felt more anxious, consistent with social identity theory and in-group literature (Smith et al. 1999). As a person feels more anxious, other cues in the environment can feel heightened, whereby proximity of the employee becomes beneficial to acceptance feelings. Our results show when a shopper feels anxiety from a shopping situation, an employee being close can negate the negative effect of anxiety in the purchase situation. Second, the positive impact of proximity on acceptance was heightened when group acceptance was important to the shopper, consistent with social identity theory (Kurzban 2001) and illustrating the influence of social identity theory on physical proximity issues.

Third, as shown through the expressiveness moderator in Studies 2–4, as well as in the field study, the relationship between acceptance and purchase intentions is most critical when the product is less expressive. This suggests employees could be present during opening hours in non-expressive product areas and this closeness will lead to positive outcomes. An employee was used in this research not only for their personification of store image and in-group reference, but also for means of managerial implications; a manager can more easily train an employee about physical proximity than train other shoppers.

While some studies have examined the impact of crowding on a shopper, this literature leaves out the impact of actual physical distance and mediating variables between personal space and the consequential reactions in a retail setting. To fill this gap, our research consistently shows physical proximity encroachments influence shoppers regarding their acceptance into a group, which ultimately leads to the shopper being more likely to purchase a non-expressive product. This is a first step in understanding physical proximity's influence to a retailer.

Findings of this study help a retailer better understand an employee's impact on purchase intentions and social identity,

leading to the consideration to add training that will help ensure the optimal amount of physical distance between employees and shoppers. Physical proximity does have implications for the store and an employee's close presence with the shopper can increase acceptance, especially if in-group inclusion is important to an anxious shopper and the product being purchased is perceived as non-expressive.

Limitations and future research

As with any study, this research is not without its limitations and opportunities for future research. Our studies examined only expressiveness of the product; other product-related characteristics should be examined for their impact on the relationship between proximity and purchase intentions. Examples might include identification with the product (Sirgy et al. 1997), utility, or frequency of purchase. While personal space was the focus of this research in terms of the employee's interaction with the shopper, future research could examine other possibilities such as visual contact (Bateson et al. 2006; Elsbach 2003), verbal and non-verbal cues (Burgoon et al. 1989; Stillman 1978; Winner 2002), or even olfactory differences (Krishna et al. 2010; Spangenberg et al. 2006; Spielberger 2013), such as an employee who smells like smoke or a fragrance, and the impact these variables have on acceptance and purchase intentions. The findings of this research could also be combined with findings and variables regarding companion shoppers (Lindsey-Mullikin and Munger 2011) to examine the impact family, friends, or acquaintances have on the personal space–purchase intentions relationship.

Future research should also further examine the competing negative path from proximity to purchase intentions evident in Study 4 when in-group importance was low. With competing mediation, it is possible that while acceptance is an appropriate mediator, another mediator exists within the framework that would explain the negative path (Zhao et al. 2010). Finding and examining this mediator when in-group inclusion is low could help managers to further understand when an employee should and shouldn't be physically close to a shopper.

Conclusion

This study is a first step in understanding what personal space means to shoppers, what functions it serves, and how it impacts retailers. The data show how employees can impact a shopper through personal space encroachment, ultimately resulting in changes of the shopper's purchase intentions and behavior. While much work is still to be done regarding physical proximity and shopping, the findings here help to fill several gaps showing how physical proximity can add to the positive aspects of the shopping experience, an area of research the marketing discipline has called for (Achrol and

Kotler 2012; Deighton et al. 2012). This study ultimately provides a base from which future research can expand to create a more holistic model of physical proximity while shopping.

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Appendix

Table 3 Related research overview

Author (year)	Major findings related to topic	Methodology	Theory used	Gap 1: physical distance of employee presence		Gap 2: retail and purchase decision intentions		Gap 3: responsible mechanisms		Gap 4: product differences
				Employee presence	Physical proximity	Purchase intentions	Retail context	Acceptance	In-group importance (IGI) & anxiety (ANX)	
Baker et al. (2002)	Social factors add to the service quality perceptions which has a positive relationship to store patronage intentions.	Videotape simulations of browsing/shopping experience (2 studies)	Inference theory, schema theory, theory of affordances, environmental psychology	Yes (as social level)	No	Yes (store patronage intention)	Yes	No	IGI: No ANX: No	Yes (merchandise quality and value perceptions)
Beitelspacher et al. (2012)	Trust and privacy expectations lead to perceived threats from RFID technology, which leads to behaviors and attitudes	Lab experiment	Loss-aversion theory	No	No (examines privacy)	Yes (purchase intentions)	Yes	No	IGI: No ANX: No	No
Bitner (1992)	Typology of physical environment on employee and customer responses.	Conceptual		Yes	No	Yes	No (service)	No	IGI: No ANX: No (broad category of mood)	No
Eroglu and Machleit (1990)	Higher retail density leads to higher crowding perceptions leading to less satisfaction in task-oriented shoppers.	Lab experiment	Information processing, psychological reactance	No	No (crowding)	No (satisfaction)	Yes	No	IGI: No ANX: No	No
Eroglu et al. (2005)	Crowding lessens satisfaction, and is mediated by emotional reactions; expectations, tolerance, and store type moderate.	Field studies	Differential Emotions theory, arousal theory	No	No (crowding)	Yes (if purchase was made)	Yes	No	IGI: No ANX: No	No
Grewal et al. (2003)	If a store is crowded, customers believe their wait will be longer, decreasing patronage intentions.	Video experiments	Inference theory	Yes	No (crowding)	Yes (store patronage)	Yes (service intense)	No	IGI: No ANX: No	No
Maeng et al. (2013)	Crowding leads consumers to prefer conservative/safe options which is lessened when the crowd is composed of in-group members.	Experiments	Social identity theory	No	No (crowding)	No	No	No	IGI: Yes ANX: Yes	No

Table 3 (continued)

				No	No (crowding)	Yes	Yes	No	IGI: No (uses in-group as a measure of similarity) ANX: No	Yes (product value)
O'Guinn et al. (2015)	Social density (crowding) in a store causes a decrease in perceptions of social class and income of others, product value, and purchase intentions.	Lab experiments-picture scenarios	Sociological theory of material culture, social identity theory,	No	No (crowding)	Yes	Yes	No	IGI: No (uses in-group as a measure of similarity) ANX: No	Yes (product value)
Wan and Wyr (2015)	When shoppers are concerned about self-presentation, they react more positively to less attractive service providers, interact more with the provider, and are more likely to purchase the service.	Field and lab experiments	None given	Yes	No (measures attractiveness of service provider)	yes	No (service)	No	IGI: No ANX: yes	Yes (product type-Embarrassing products activate the relationship)
Current Study	An employee being physically closer to a shopper can cause an increase in acceptance which causes higher purchase intentions. This relationship is strengthened when in-group importance is high and when the product is non-expressive	Lab and field experiments	Yes	Yes	Yes	Yes	Yes	Yes	IGI: Yes ANX: Yes	Yes

Table 4 Descriptive statistics and correlations

	M	SD	Correlations			
			1	2	3	4
Study 2:						
Construct						
Acceptance (1)	6.22	1.25				
Purchase Intentions (2)	5.58	1.45	.29*			
Anxiety (3)	2.42	1.40	-.41**	-.36**		
Expressiveness (4)	2.65	0.69	-.36**	0.05	0.10	
Study 3:						
Construct						
Acceptance (1)	5.61	1.46				
Purchase Intentions (2)	5.76	1.31	.31**			
Anxiety (3)	2.65	1.84	-.58**	-.35**		
Expressiveness (4)	3.75	1.45	-0.02	0.14	0.11	
Study 4:						
Construct						
Acceptance (1)	4.44	1.70				
Purchase Intentions (2)	5.51	1.27	.29*			
Anxiety (3)	3.02	1.17	-.65**	-.40**		
Expressiveness (4)	2.27	0.75	-0.02	0.20	-0.24	
In-group (5)	3.93	1.36	-0.03	-0.11	0.09	-0.24

* $p < .05$; ** $p < .01$

Table 5 Conditional indirect effects of personal space encroachment on purchase intentions at values of the moderators for Studies 2 and 4
*Significant paths in bold

Ingroup moderator	Anxiety moderator	Expressiveness moderator	Effect	Boot SE	BootLLCI	BootULCI
Study 2: Indirect Effects						
na	Low ^a	Low	.2908	.3360	-.2258	1.1641
na	Low	Moderate	.1811	.2171	-.1515	.7854
na	Low	High	.0713	.1226	-.0653	.4602
na	Moderate	Low	1.1889	.4621	.4352	2.2818
na	Moderate	Moderate	.7403	.3365	.2201	1.5693
na	Moderate	High	.2917	.3089	-.1193	1.1185
na	High	Low	2.0870	.9065	.7247	4.2251
na	High	Moderate	1.2995	.6555	.3468	2.9648
na	High	High	.5120	.5778	-.1173	2.1620
Study 3: Indirect Effects						
na	Low	Low	.1209	.0984	-.0179	.3651
na	Low	Moderate	.0774	.0755	-.0164	.2759
na	Low	High	.0339	.0680	-.0269	.2486
na	Moderate	Low	.3322	.1438	.1042	.6717
na	Moderate	Moderate	.2127	.1082	.0557	.4646
na	Moderate	High	.0932	.1230	-.0913	.4086
na	High	Low	.5674	.2724	.1282	1.2483
na	High	Moderate	.3633	.1941	.0806	.8504
na	High	High	.1591	.2064	-.1363	.7442
Study 4: Direct Effects						
Low	na	na	-1.13		-1.93	-.33
Moderate	na	na	-.86		-1.42	-.30
High	na	na	-.58		-1.40	.23
Study 4: Indirect Effects						
Low	na	Low	-.04	.21	-.52	.33
Low	na	Moderate	-.02	.13	-.31	.20
Low	na	High	-.004	.08	-.22	.11
Moderate	na	Low	.29	.14	.07	.64
Moderate	na	Moderate	.16	.09	.02	.39
Moderate	na	High	.03	.10	-.14	.28
High	na	Low	.62	.24	.25	1.17
High	na	Moderate	.34	.18	.09	.77
High	na	High	.06	.21	-.27	.55

^a Low is 1 standard deviation from the mean, moderate is the mean, and high is 1 standard deviation above the mean

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