“It’s Gotta Be the Shoes!”: Kansei Design Feel of Basketball Shoes and Athlete Perceptions

by

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Abstract

Research shows that for athletic shoes, visual attributes such as color and style can be more important than ergonomic or technical attributes in purchase decisions. Kansei engineering is one method commonly used in product development to understand emotions and their linkages with specific design characteristics, which can then be used to design products that communicate the desired 'feel'. The current study posits that the design characteristics of shoes and the emotions that they elicit can be statistically grouped together, creating Kansei design feels that have applications for product development, marketing, and mass customization. An exploratory study using male millennial athletes revealed four design feels for basketball shoes, which are associated with differing design characteristics. These design feels were further analyzed to understand their relationships with consumer delight, perceived athletic performance enablement (PAPE), and wear intention, ultimately revealing the ideal design of basketball shoes to influence athletes' emotions, perceptions, and behaviors.

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CHAPTER I. INTRODUCTION

"How can we make you better?" is the question Nike asks LeBron James, one of the greatest basketball players of our generation, when designing his shoe every year (Feifer, 2014). Professional athletes choose their gear based on how well it will improve their performance, but they place importance on personal expression through style and aesthetic attributes as well. Design characteristics such as colorway, the combination of colors in the design (Engvall, Edler, & Bengtson, 2012), mesh patterns, ankle coverage (high top, mid top, or low top), material combinations, and strap feature (presence or absence of an additional closure strap) come together to create the complete product form of basketball shoes, which can have an impact on how the athlete perceives the shoe. For professional basketball players, who are often given free sneakers in exchange for publicity or as part of an endorsement deal, the shoes that elicit the most excitement, interest, and potential for performance improvement are the ones that are likely to be chosen.

While products are made up of the sum of their parts and are viewed as a whole by consumers (Bloch, 1995), previous research has shown that psychological feelings and emotions can in fact be tied to consumer products such as digital cameras and athletic shoes based on their individual design characteristics (Wang, 2015; Shieh & Yeh, 2015). Kansei engineering, developed by Nagamachi (1995), is one method commonly used in product development to gain a better understanding of those emotions and use them to design products. Emotions and the design characteristics of a product that elicit them can be statistically grouped together, creating

Kansei design feels, which can further be analyzed to understand how consumers psychologically and behaviorally react to differing design styles, such as modern, powerful, or nostalgic (retro).

As previous research has shown that consumers can react both cognitively and affectively to the design of a product (Bitner, 1992; Bloch, 1995), it is beneficial to explore both of these processes when seeking to understand consumer response to the product form of basketball shoes. Consumer delight, an affective response that can be equated to the "wow factor" or an emotion characterized by joy and positive affect (Kumar, 1996), is an ideal variable to understand what design characteristics of a basketball shoe captivate and "wow" an athlete. In addition, the design of athletic shoes has been shown to influence changes in consumers' performance perceptions, and possibly even influence actual performance (Hoegg & Alba, 2011; Lam, Kam, Qu, & Capio, 2017). Although no previous studies known to the author have measured consumers' perceptions regarding a product's ability to enable the user to perform better, previous research has supported the notion that product-related factors, such as the usage of a brand name product, can impact actual performance (Park & John, 2014). This leads to the question, what design characteristics and Kansei design feels of the product form of basketball shoes delight the athlete and influence their perception of 'enablement' in athletic performance, resulting in an intention to wear the shoes?

This study seeks to answer the above question to provide insight for basketball shoe developers to better design products that will speak to athletes, professional and recreational, alike. In addition to serving the needs of athletes, this study will generate important implications for online mass customization toolkits for basketball shoes such as Nike ID or Under Armor ICON by linking the design elements of basketball shoes to affective design feels and

psychological and behavioral reactions they elicit from consumers, potentially simplifying the online co-design process to assist consumers in designing their ideal shoe.

Problem Statement

The athletic shoe industry in the U.S. generated more than $17 billion dollars in 2015, growing by 8% overall and by 5% for average selling price (NPD Group, 2016). According to a press release by the NPD Group in February 2016, athletic shoes are getting more expensive, but the rise in cost is anything but a deterrence to buy for consumers. In today's footwear market, where virtually every athletic shoe is equipped with the latest technology and made with performance-enhancing manufacturing techniques, the aesthetic impact of the shoe and the brand are the key differentiators for purchase decisions. Studies have shown that for athletic shoes, visual attributes such as color and style are more important than ergonomic or technical attributes when athletes are making purchasing decisions (Branthwaite & Chickalingam, 2009), but no research can be found that breaks down athletic shoes into their individual design characteristics to understand *how* color and style impact emotions, perceptions, and behavior. Previous research has focused solely on the attribute of color related to performance and style perceptions of athletic shoes (Lam et al., 2017; Shieh & Yeh, 2015), but other important attributes of basketball shoes, such as ankle coverage and strap feature, have been ignored. Shieh and Yeh (2015) found that consumers attach semantic meanings, such as the perception of modernity, simplicity, or formality, to the combinations of colors in athletic shoes; however, these authors did not explore the contribution of other shoe features in their study.

In summary, while limited previous studies have explored consumer response to the design characteristic of color in athletic shoes, almost none can be found that focus on 'athlete' perceptions and there remain numerous unanswered questions on this topic that have the

potential to benefit design and mass customization in the athletic footwear industry. Do varying design characteristics of athletic shoes elicit specific feelings for athletes? Do athletes perceive specific affective design feels of athletic shoes (e.g., powerful-looking shoes) to be performance enhancing? Does their 'delight' with the shoes trigger their purchase or intent to wear? In other words, what are the cognitive and affective routes through which the design feels of athletic shoes and their associated design characteristics impact the shoe choices of professional and recreational athletes? To address the growing importance of stylistic design in the athletic footwear industry and fill gaps in the literature related to the influence of the shoe's design characteristics on athletes' perceptions, emotions, and behavior, this study will explore the influence of basketball shoe form (based on the design characteristics of colorway, strap feature, and ankle coverage) on athletes' psychological and behavioral reactions by measuring four key dependent variables: elicited Kansei words (i.e., words that represent a product's feel for the consumer) and resultant Kansei design feels, perceived athletic performance enablement (PAPE; i.e., the belief that wearing the shoe will give the wearer heightened performance), consumer delight (i.e., a joy-filled emotion resulting from the shoe), and wear intention (i.e., the athlete's intent to wear the shoe).

Purpose

The purpose of this study is three-fold: 1) to investigate how three basketball shoe design characteristics, namely colorway, strap feature, and ankle coverage, combine to create Kansei design feels of basketball shoes based on the Kansei words that the characteristics elicit, 2) to examine how these Kansei design feels relate to PAPE (cognitive response), consumer delight (affective response), and wear intention (behavioral response), and 3) to explain the structural relationships among the affective, cognitive, and behavioral responses related to Kansei design

feels. These relationships will be explored by applying Bloch's (1995) Model for Consumer Response to Product Form, which is a framework that explains how the relationship between the design of a product and behavioral intention is mediated by the consumer's psychological responses.

Definition of Terms

Ankle coverage: a design characteristic related to the varying levels of height on the top part of a basketball shoe, which covers the ankle bone and can provide ankle support. The three levels of ankle coverage are called a high top (maximum ankle coverage; usually extends 3-4 inches past the ankle bone), a mid-top (moderate ankle coverage; usually extends 1-2 inches past the ankle bone), and a low top (low ankle coverage; usually stops at the ankle bone) (Daack & Senchina, 2014).

Colorway: "the particular combination of colors applied to a sneaker" (Engvall et al., 2012, para. 5). In the current study, the colorway design characteristic is operationalized in three ways based on previous research (Shieh & Yeh, 2015) and an environmental scan of the athletic footwear market: the primary (or dominant) color, the number of colors, and the midsole color. The primary color of the shoe will be one of seven colors found by Shieh and Yeh (2015) to be representative of the athletic footwear industry. These colors are blue, white, red, yellow, green, black, and orange. A single color or combinations of two or three colors within a shoe design will be used to select stimuli for the number of colors operationalization as Shieh and Yeh (2015) found that combinations of no more than three colors in an athletic shoe were preferred by consumers. Finally, the environmental scan of the athletic footwear market revealed that a differentiating factor between basketball shoe designs was the usage of a midsole color that was either matching or

contrasting with the primary shoe color. Therefore, this operationalization is included for analysis in the current study.

Consumer delight: "an emotion characterized by high levels of joy… felt by a customer towards a company or its offering (product/service)" (Kumar, 1996, p. 9). Although the original conceptualization of this variable by Plutchik (1980) includes the emotion of surprise as a necessary component, more recent studies such as Kumar et al. (2001) have found that consumers can be delighted without feeling surprised as it is virtually impossible for brands to continuously surprise their customers throughout their entire purchasing relationship, especially in the case of repeat purchases.

Design characteristics: objective qualities of the design of a physical product "characterized by its geometry, dimensions, textures, colors, graphics and detailing" (Crilly, Moultrie, & Clarkson, 2004, p. 55; De Sausmarez, 1983; Hannah, 2002; Scott, 1951) that combine to make a product's form. In the current study, design characteristics are operationalized as colorway, strap feature, and ankle coverage based on perceptually salient characteristics identified through an environmental scan of available men's basketball shoes across different brands.

Kansei design feels: levels of strength on the factors created from specific design characteristics combining together during perception and expressing a particular meaning to consumers (Orth & Malkewitz, 2008). This is based on Pepper's (1949) "type" concept, which refers to "an association of a certain set of traits in certain relationships, such that they are recognizable as a whole" (Orth & Malkewitz, 2008, p. 66). In this study, Kansei design feels are derived from design characteristics grouped together based on the Kansei words they elicit.

Kansei engineering: a product development method of "translating technology of a consumer's feeling…for a product into design elements" (Nagamachi, 1995, p. 3). The Japanese word *Kansei* translates to "feeling" in English (Nagamachi, 1995). For example, Kansei engineering was used to design the Mazda Miata car to achieve the concept of human-machine unity, resulting in the creation of design characteristics such as narrow seats and shorter overall length to give the consumer the desired tight feeling (Nagamachi, 1995).

Kansei words: descriptive bipolar word pairs, such as rough versus delicate or modern versus retro, that represent consumers' feelings for a product (Nagamachi, 1995; Shieh & Yeh, 2015).

Perceived athletic performance enablement (PAPE): a new concept developed in the current study that refers to how the potential use of a product, brand, or message can improve perceived athletic self-efficacy. For example, the usage of a brand name such as Gatorade has been shown to improve an athlete's athletic self-efficacy and actual performance (Park & John, 2014). In this study, the perception of performance enablement is increased or decreased with the imagined experience of using varied basketball shoes.

Product form: a number of design characteristics (such as colorway, strap feature, and ankle coverage) "chosen and blended into a whole by the design team to achieve a particular sensory effect" (Bloch, 1995, p. 17).

Self-efficacy: "judgements of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122).

Strap feature: a design characteristic originally used by Nike consisting of a strap across the ankle or laces of an athletic shoe that can either be decorative or used for improving ankle stability by tightening the fit of the shoe (Bengtson, 2012; "Hold Tight," 2016). In the

current study, strap feature will be operationalized as the presence or absence of a strap (or multiple straps) within the design of the shoe.

Wear intention: the likelihood that a consumer will don a wearable product (Deroche, Stephan, Castanier, Brewer, & Le Scanff, 2009)

CHAPTER II. LITERATURE REVIEW

This chapter presents the review of literature related to the current study, beginning with an explanation of Bloch's (1995) model for Consumer Response to Product Form as the framework guiding the research. This is followed by a review of scholarly and industry literature for the constructs of product form, PAPE, consumer delight, and wear intention. Lastly, the proposed research questions guided by the literature and conceptual framework of Bloch's (1995) model are introduced based on noted gaps in previous work.

Theoretical Framework

This study employs the model for Consumer Response to Product Form proposed by Bloch (1995) to examine relationships between the product form of basketball shoes and consumers' cognitive, affective and behavioral responses related to the product. Specifically, the current study first examines how basketball shoe design characteristics (colorway, strap feature, and ankle coverage attributes) combine to create Kansei design feels for basketball shoes. Secondly, the study examines how these design feels influence PAPE (cognitive response), consumer delight (affective response) and wear intention (behavioral response). Bloch's model is a useful framework for examining the above relationships, since it describes how the product's visual appearance results in both cognitive and affective psychological responses, which in turn lead to either approach or avoidance behaviors.

Within the model, Bloch (1995) discusses three main components: the product form, which consists of the characteristics that make up the product design; the psychological

responses to the product form, which include both cognitive and affective responses (Bitner, 1992); and the resulting behavioral response, which can be generally characterized by approach or avoidance behaviors. Cognitive responses, according to Bloch's (1995) conceptualization, can be based on both product-related beliefs as well as categorization within the overall product category. For example, Bloch (1995) states that "product form may create or influence beliefs pertaining to such characteristics as durability, dollar value, technical sophistication, ease of use, sex role appropriateness, and prestige" (p. 19). Affective responses can generally be categorized as either a positive or negative response (Bloch, 1995). A consumer may like the appearance of a product's form, resulting in a positive affective response, or they may dislike it and experience a negative affective response. Finally, Bloch's (1995) model postulates that the drive to approach or avoid a product depends on the strength of the positive or negative psychological responses to the product form. In other words, if a consumer is attracted to the design of a product, feeling a sense of positive affect toward it and has generated positive product-related beliefs, they are more likely to engage in approach behaviors, such as purchasing or patronization. For example, a consumer may be confronted with the product form of a sports car while shopping for a new vehicle. The product form of this sports car is seen as a whole, while being made up of several design characteristics such as a red color, sleek body, and rear spoiler. The consumer, while cognitively and affectively processing this car, could form beliefs that the car is fast or powerful based on the design, may feel excitement and positive affect, and may ultimately feel a drive to approach the car, test drive it, or even purchase it.

Bloch (1995) recognized that affective and cognitive responses can happen in any order and often occur simultaneously. This fits the study of athletic footwear well because positive or negative affect is just as important as cognitive perceptions of the shoes when it comes to the

resulting behavioral response. For example, an athlete may experience positive affect toward a shoe but may choose not to purchase it because he or she may perceive the shoe to be uncomfortable. Three postulates stated in Bloch's (1995) theory are integral to the framework of this study. First, the author states that a product's form influences perceptions regarding its attributes and performance. This postulate aligns perfectly with the hypothesis that the product form of basketball shoes will elicit a cognitive response of PAPE. Next, it states that "the intensity and valence of affective reactions to a product are a function of its perceived form" (Bloch, 1995, p. 20), which fits in the scope of this study because it is believed that the form of basketball shoes leads to an affective response of consumer delight. Finally, the postulate stating that the drive to approach or avoid a product is increased based on the strength of the positive or negative psychological responses to the product form suggests that higher (lower) perceived performance and higher (lower) consumer delight will result in a higher (lower) intention to wear the basketball shoes.

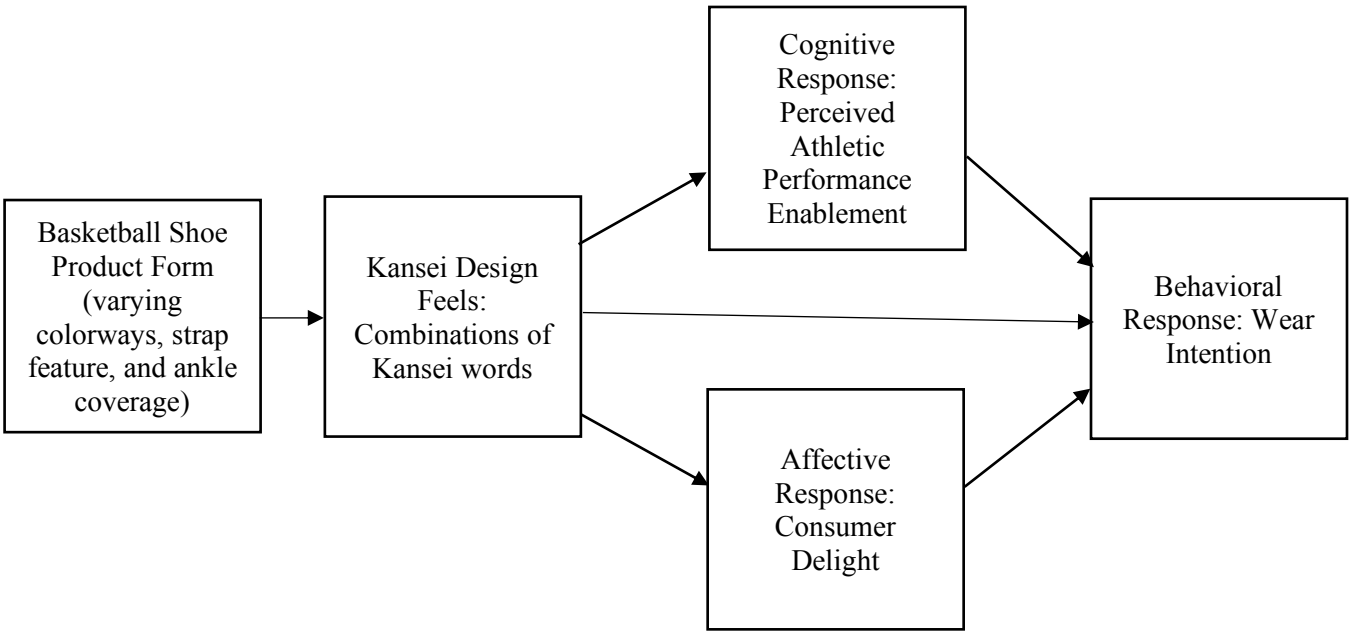

Figure 1. Conceptual model adapted from Bloch's (1995) model for consumer response to product form.

Background Literature and Research Questions

Product Form

Product form is defined by Bloch (1995) as "a number of elements chosen and blended into a whole by the design team to achieve a particular sensory effect" (p. 17). Unfortunately, there are not many sources in the literature that have determined a way to measure the sensory effect of a product's form for all products, or even specific products for that matter. Breaking a product down into its many individual design characteristics for their sensory effect, could take away from its overall "whole," and intended semantic effect. According to Bloch (1995), a product is made up of the sum of its parts, and is viewed by the consumer holistically, rather than by each individual design characteristic that constitutes it. In the succeeding sections, the current study explores potential design characteristics, such as colorway, strap feature, and ankle coverage, which have the potential to produce holistic differences in the affective properties of basketball shoes.

Colorway. A shoe's colorway can be defined as "the particular combination of colors applied to a sneaker" (Engvall et al., 2012). In general, color can be a powerful environmental cue that can impact psychological processing such as stimulus perceptions. A seminal work by Elliot and Maier (2007) outlines the model of color and psychological functioning, which states six core premises. In summary, the researchers explain that color communicates meaning at the subconscious level, through both learned associations and biologically-ingrained responses, which results in approach or avoidance behavioral responses depending on the positive or negative evaluative processing of the color. The subconscious nature of the psychological processing of color makes color associations enduring and resolute, although the meanings derived from color can change based on context. For example, the bright red color of an apple

can signify that it is ripe and ready for eating, while the bright red color of a sports car can signify that it is fast.

One study by the same authors and their colleagues revealed that seeing the color red before a task, such as taking an achievement test, has been shown to subconsciously affect performance on that task (Elliot, Maier, Moller, Friedman, & Meinhardt, 2007). Researchers from this same study posited that the effects of red could also impact physical performance, although this was not the focus of their research. Along this same vein, color has been shown to lead to certain perceptions such as aggression when portrayed in sport uniforms. In a study conducted by Frank and Gilovich (1988), results indicated that teams wearing black uniforms are penalized and treated significantly more harshly than teams wearing white, even though behaviors were the same. In addition, wearing a black uniform can "increase a person's inclination to engage in aggressive behavior" (Frank & Gilovich, 1988, p. 83) in a laboratory setting, demonstrating that a purely aesthetic factor, such as color, can impact both actual and perceived sport performance.

Results from a study by Lyons Jr., Jackson Jr., and Singleton-Jackson (2011) indicated that for 75% of millennial African-American consumers (who spend more on athletic footwear annually than any other race), color is an integral factor in athletic footwear purchase decisions. Shieh and Yeh (2015) demonstrated that color combinations, or colorway, in sport shoes can have a significant impact on consumers' preferences and style perception of the shoes, measured using Kansei engineering methods. This combination of preference and style perception based on color is a key consideration for consumers while shopping for shoes. The researchers found that there were seven colors that were representative of athletic footwear: blue, white, red, yellow, green, black, and orange. In addition, shoes with three colors in the design were most liked and

using white as a secondary color increased preference (Shieh & Yeh, 2015). Interestingly, the shoes with a primary color of red or black were the most likely to be perceived as modern, and shoes that scored the highest for the modern adjective were also the most liked. Finally, shoes with a primary color of black, white, or red were the most liked overall by the participants in the Shieh and Yeh (2015) study. The preceding literature could lead one to believe that color in professional sport shoes such as basketball shoes could be linked to specific affective properties, which may influence athlete's choice of specific shoes.

An environmental scan of the athletic footwear industry also revealed that, while basketball shoes differ in the primary color and number of colors used in the colorway, they also can be differentiated by whether they have a matching or contrasting colored midsole. This follows with findings from Shieh and Yeh's (2015) study, as it was discovered that shoes with a matching midsole color received the highest ratings for the adjectives of casual and simple, while contrasting midsole colors received varied ratings based on the colors used. This shows that midsole color can be an influential factor for consumers' perceptions of the shoe.

Based on the above literature and an environmental scan of the athletic footwear market, the colorway design characteristic is operationalized in three ways in the current study: the primary (or dominant) color, the number of colors, and the midsole color. The primary color of the shoe will be one of seven colors found by Shieh and Yeh (2015) to be representative of the athletic footwear industry. These colors are blue, white, red, yellow, green, black, and orange. A single color or combinations of two or three colors within a shoe design will be used to select stimuli for the number of colors operationalization as Shieh and Yeh (2015) found that combinations of no more than three colors in an athletic shoe were preferred by consumers. Finally, the environmental scan of the athletic footwear market revealed that a differentiating

factor between basketball shoe designs was the usage of a midsole color that was either matching or contrasting with the primary shoe color. Therefore, this operationalization is included for analysis in the current study.

Strap feature. A preliminary environmental scan of the basketball shoe market revealed that many basketball shoe styles incorporate a strap feature into the design of the lace section or ankle section of the shoe. The original athletic shoe strap, first patented in the United States in 1982, was claimed to be a closure assembly that allows the wearer to quickly adjust the tightness of their sports shoes with one hand, which could help maintain the ideal fit and comfort level (Antonious, 1982). While no research can be found on the usefulness of this feature, it seems to be a differentiating design characteristic between several different styles. The Nike website (www.nike.com) describes this feature as flexible straps that enhance support for the foot during activity, yet the number of straps and location of the strap feature is different on various styles (see Figure 1). As the strap feature has been said to improve the fit of athletic shoes, one study that discusses the effects of tightness in running shoes could be considered relevant. Hagen and Hennig (2009) conducted a study in which running athletes completed a running exercise with varying shoe lacing styles, ranging from weak to tight lacing through two to seven eyelets. The runners perceived the tightest lacing with all seven eyelets to be the most secure, and this configuration also reduced the most shock and pressure in the foot. These findings led the researchers to conclude that, based on both runners' perceptions and kinetic data, tighter and fully laced shoes lead to the most effective use of running shoe technology, although the runners had varying preferences for the levels of tightness of the shoes for comfort. This leads the researcher to believe that the inclusion of the strap feature may be a factor of personal fit, linked to aesthetic preference and specific cognitive responses, such as the belief that the shoe is more

secure or sleek due to its closeness to the foot. In this study, strap feature will be operationalized as either having a single/multiple strap(s) or having no strap(s).

Figure 2. Examples of various strap features on Nike basketball shoes. Retrieved April 15, 2017, from https://www.nike.com.

Ankle coverage. There are several styles of ankle coverage for sport shoes, but basketball shoes generally have only three: high top (high ankle coverage), mid top (moderate ankle coverage), and low top (low to no ankle coverage). According to an article published by ESPN, as well as based on common basketball knowledge, the clear majority of basketball players wear high top shoes on the court (Drehs, 2008). As far back as 1917, when the original Converse All-Star was created specifically for basketball, players wore high top shoes (Sokolowski, n.d.). Professional basketball player Kobe Bryant developed his signature Kobe IV shoe with Nike from 2007 to 2008 and was inspired by soccer cleats, requesting a low top shoe that would be more lightweight than a high top. Bryant was said to believe that a low top, due to less material, would decrease weight and could improve performance (Drehs, 2008). While it does not appear

that any studies have been published to support this claim, the popularity of Bryant made low top basketball shoes more mainstream and today they are more common.

The main reason for support for high top basketball shoes is the idea of increased ankle support, preventing ankle inversion and possible injury. In a study conducted in 2000, it was found that high top shoes significantly reduce the degree of inversion experienced during various loading activities compared to low top shoes (Ricard, Schulties, & Saret, 2000). The researchers concluded that it is possible that players wearing high top shoes are less likely to experience ankle injuries than those wearing low top shoes. This finding supports a common belief among basketball players; therefore it is possible that players may perceive high top basketball shoes to be safer and, in turn, a tool for better performance. There is still conflicting evidence in the literature, though, that states the opposite. One such study found that there was no significant difference between the number of injuries that occurred in players wearing high top versus low top basketball shoes (Barrett et al., 1993), and another found that while high top football cleats may prevent some ranges of motion associated with ankle injury without reducing performance, athletes do not perceive them to be as comfortable or lightweight as low or mid top cleats (Daack & Senchina, 2014). Therefore, while it is possible that basketball players may have certain beliefs about ankle coverage, one can presume that much of the purchasing decision related to ankle height is based on preference and affective associations.

The three levels of ankle coverage operationalized in the current study are high top (maximum ankle coverage; usually extends 3-4 inches past the ankle bone), a mid-top (moderate ankle coverage; usually extends 1-2 inches past the ankle bone), and a low top (low ankle coverage; usually stops at the ankle bone) (Daack & Senchina, 2014).

Kansei Engineering

Kansei engineering, defined as a method of product development that attempts to gain an understanding of consumers' feelings and translate them into design characteristics, originated in Japan and has been used in a variety of industries spanning from automobiles to digital cameras and more (Nagamachi, 1995; Wang, 2015). In Japanese, the word *Kansei* translates to "a consumer's psychological feeling…regarding a new product" (Nagamachi, 1995, p. 4). Nagamachi, the creator of Kansei engineering, published a seminal work on the methodology of Kansei in 1995 in order to help product developers shift to a more consumer-focused mindset. For example, Nagamachi (1995) explains that a customer may view a product they want to purchase as "luxurious" or "strong," but product developers may not understand the exact design characteristics that led to these judgements. Kansei engineering methods aid product developers in pinpointing design characteristics and deriving their emotional or semantic meaning from consumers, allowing them to design products that are likely to elicit the desired emotional response.

Kansei engineering methods have been used to design a variety of consumer products, ranging from automobiles to brassieres to home appliances (Nagamachi & Lokman, 2011). Similar to the principles of Gestalt psychology, a key point of Kansei engineering is that the whole design of a product is more important than its individual parts; in other words, every design factor or characteristic of a product contributes to a consumer's overall Kansei. For example, an article of clothing can be broken down into many elements such as the overall style, number of buttons, length, and color. It is the combination of all of these design characteristics that influences overall perceptions, and thus the Kansei words elicited, of the garment

(Nagamachi & Lokman, 2011). Removal or alteration of any one of these design characteristics will alter the Kansei words with which the product associated.

Nagamachi (1995) developed three types of procedures for Kansei engineering, ranging from relatively simplistic to highly complex methodologies. Type I, Category Classification, consists of conceptually deriving design characteristics by breaking down a Kansei category using a visual tree structure. For example, product developers of the Mazda Miata car used this technique to conceptually infer that a car design which makes the driver feel as if they are 'one with the car' consists of multiple sub concepts including a "tight feeling" (see Figure 3; Nagamachi, 1995). This "tight feeling" concept was then further broken into the ideas of simplicity and appropriate narrowness, which resulted in the design characteristics of a four-meter vehicle length and narrow two-seat width. Type III, the most complex method of Kansei engineering, consists of a mathematical model based on Types I and II (Nagamachi, 1995). While these two procedures are highly useful for reaching various goals in product development, it is Type II, the computer-assisted Kansei engineering system (KES), that is most relevant to the current study. In this procedure, the process begins with surveying consumers to collect Kansei words associated with a certain product. Semantic differential scales are then created based on bipolar Kansei words, which are then used as measurements for stimuli images of the product. Nagamachi (1995) then recommends using factor analysis and multiple regression analysis to determine the design characteristics that correspond to Kansei words, allowing the product developer to understand what characteristics to include in the design of a product to elicit a specific emotional response from the consumer.

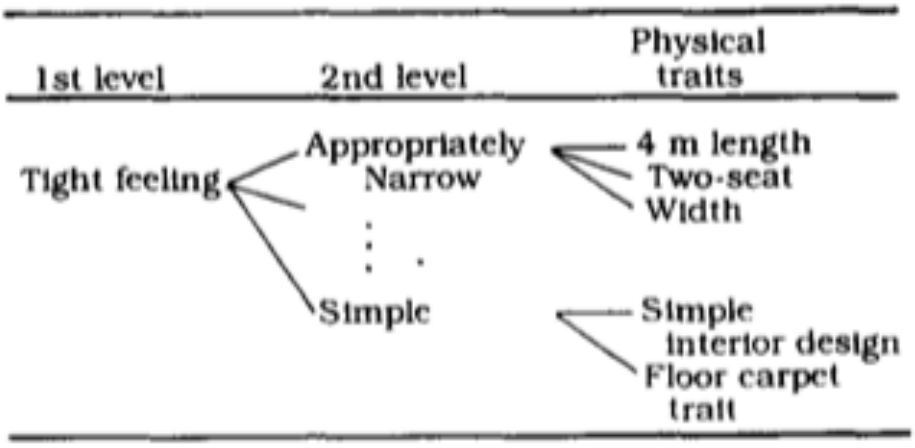

Figure 3. An example of refining the physical traits from Kansei subconcepts, in the case of the Mazda Miata car. "Kansei engineering: A new ergonomic consumer-oriented technology for product development," by M. Nagamachi, 1995, *International Journal of Industrial Ergonomics, 15,* p. 5.

The study by Shieh and Yeh (2015) operationalized the product form of sports shoes based on their exterior colors using Kansei words. An environmental scan of the sport shoe market combined with consultations with experts led Shieh and Yeh (2015) to 20 Kansei word pairs that can be widely applied to all sports shoes (see Appendix A), covering the scope of what a consumer may see when they view a sports shoe product. Examples of these word pairs include simple-complex, modern-retro, obtrusive-modest, and compliant-rigid (Shieh and Yeh, 2015). In their study, Shieh and Yeh (2015) had respondents view stimulus images of sports shoes in different colorways and rate each shoe based on the 20 word pairs presented as semantic differential scales, as suggested by Nagamachi (1995). The researchers found that there was a strong correlation between the adjective pairs of modern-retro and like-dislike, while the most liked colorway was red/white followed by black/white and white/white (Shieh & Yeh, 2015). In other words, shoes that were perceived to be modern and/or had the primary colors of red, black or white were highly liked by the participants. It was also discovered that specific colors and

combinations could be linked to Kansei words; shoes with combinations of three (one) colors scored the highest ratings on the complex (simple) adjective, while the color green as a primary color resulted in high ratings for retro and white was perceived as the most formal. The above findings show that changes in a single design characteristic such as color can change the semantic effect of the product form through eliciting different Kansei words and feelings.

The deeper understanding of design characteristics of basketball shoes, such as colorway, ankle coverage, and strap feature, as well as the use of Kansei words to explain feelings elicited by these design characteristics, leads to the following research question:

RQ1a: What Kansei design feels can be identified based on the elicited feelings from basketball shoes?

RQ1b: What are the linkages between the design characteristics that make up the product form of basketball shoes (primary color, number of colors, midsole color, strap feature, and ankle coverage) and the Kansei design feels?

Perceived Athletic Performance Enablement of a Product

Perceived athletic performance enablement (PAPE) is a new concept developed in the current study that relates to how the potential use of a product, brand, or message can improve perceived athletic self-efficacy. In this study, the perception of performance enablement is increased or decreased with the imagined experience of using varied basketball shoes. Self-efficacy, first conceptualized by Bandura (1982), is a psychological mechanism based on "judgements of how well one can execute courses of action required to deal with prospective situations" (p. 122). It is a determination of personal capability to perform a task; for example, one can have varying levels of self-efficacy for basketball-related activities, such as shooting a basket from the free throw line. A professional basketball player, based on their level of skill,

will more than likely have a much higher self-efficacy for this task than someone who has never played basketball before. While a self-efficacy scale for physical and competitive sports has been created (Ryckman, Robbins, Thornton, & Cantrell, 1982), it does not take into account the perception that physical self-efficacy in sports can potentially be increased with the addition of external factors, such as additional training or the use of brand-name or attractive sports gear. In one study by Park and John (2014), the usage of a brand name such as Gatorade was shown to improve participants' athletic self-efficacy and actual athletic performance, although the authors did not conceptualize a new construct name to describe this phenomenon. Hence, the current study attempts to differentiate the phenomenon from physical self-efficacy by introducing it as a new construct: a product's PAPE, which refers in this study to the perception that the use of a product, service, or brand can improve athletic ability.

Perceived performance, without the enablement factor, has been analyzed in a variety of contexts, including sport performance and workplace performance. For example, a study conducted by Daniels, Glover, and Mellor (2014) found that opportunities in the workplace to express affect can lead to an increased feeling of control over one's job and, in turn, can sometimes increase perceived job performance. In 1998, Riemer and Chelladurai published an article that described the process of developing their Athlete Satisfaction Questionnaire (ASQ), which included 15 dimensions related to factors that could impact an athlete's satisfaction. Both individual performance and team performance, as well as factors such as ethics and budget, were included. The individual performance subscale included three items: "the degree of which I have reached my performance goals during the season," "the improvement in my performance over the previous season," and "the improvement in my skill level thus far" (Riemer & Chelladurai, 1998, p. 140). The researchers developed this scale using collegiate athletes to facilitate the

evaluation of athletes and teams, which could lead to the discovery and remedy of issues affecting satisfaction (Riemer & Chelladurai, 1998).

Not much investigation can currently be found into the relationship between different types of products and perceived performance, let alone perceived performance enablement. In a study conducted by Hoegg and Alba (2011), findings from their experimental design supported those of previous researchers that product form can lead to biased judgements. By using athletic shoes as stimuli, Hoegg and Alba (2011) found that the form of the athletic shoes influenced functional performance perceptions; even when a shoe with a superior appearance had a description that included inferior features, the participants still perceived that shoe to be higher performing. In subsequent experiments from the same study, the researchers expanded the generalizability of these findings by using stimuli from other product categories such as cookware and stereo speakers (Hoegg & Alba, 2011). They found that across several product categories, functional design of a product is separate from aesthetics and can indicate a level of performance, which can affect consumer judgements.

Most relevant to the current study is the recent finding that the color of basketball shoes can influence perceived jumping performance (Lam et al., 2017). The researchers found that university basketball players who preferred red shoes perceived themselves to be taller when wearing red shoes compared to blue or black shoes. In addition, pairwise comparisons revealed that there was in fact a statistical difference in actual flight time (i.e. the amount of time spent in the air during a jumping activity) when players who preferred black shoes were wearing red shoes, compared to players who preferred and were wearing red shoes. While the researchers concluded that wearing red shoes may result in benefits for basketball players, they also noted that color preferences (regardless of the color) could influence actual jumping performance. This

supports the notion that product form especially that of athletic shoes, can influence perceived performance, leading to the following research question:

RQ2: Does the basketball shoe's Kansei design feel significantly influence PAPE?

Consumer Delight

Consumer delight is defined as "an emotion characterized by high levels of joy… felt by a customer towards a company or its offering (product/service)" (Kumar, 1996, p. 9). Although the original conceptualization of this variable by Plutchik (1980) includes the emotion of surprise as a necessary component, more recent researchers such as Kumar et al. (2001) have found that consumers can be delighted without feeling surprised as it is virtually impossible for brands to continuously surprise their customers throughout their entire purchasing relationship, especially through repeat purchases. This emotional response can be described as the "wow" factor, giving the consumer a feeling of wonder, heightened interest, and pleasure. Consumer delight, an affective response, is different from satisfaction because satisfaction is when a product meets the expectations of the consumer, while delight is when that product exceeds the expectations (Oliver, 1977; Wang, 2011).

In a study conducted by Wang (2011), the relationships among supporting services in a hospitality environment, consumer delight, and repurchase intentions were investigated. By differentiating delight from satisfaction, the results indicated that supporting services can influence consumers' repurchase intentions only if the supporting service delights (not simply satisfies) the consumer. This shows the importance of exceeding the consumer's expectations (delight), not just meeting them (satisfaction), for hospitality or non-utilitarian services and products.

No studies known to the author seek to understand how footwear design influences consumers' feeling of delight. As basketball shoes are both utilitarian (must be ergonomic) and hedonic (opportunity for many different styles and colors), consumer delight could play a role in determining an athlete's affect toward a shoe and their resulting behavior. For a consumer to have a positive purchase intention, as shown by Wang (2011), they must be delighted and not just satisfied. This leads the researcher to propose the following research question:

RQ3: Does the basketball shoe's Kansei design feel significantly influence consumer delight?

Wear Intention

Like other variables in this study, wear intention, or the likelihood that a consumer will don a wearable product (Deroche et al., 2009), has not been widely studied. Research that can be found in the literature related to wear intention usually measures it in relation to perceived risk, such as the intention to wear safety gear (Deroche et al., 2009) or seat belts (Trafimow & Fishbein, 1994). Although the exact variable of wear intention is not widely studied as of yet, there are other variables such as purchase intention or usage intention that may operate similarly. For example, in a study conducted by Finn (2005) consumer delight in relation to experiences on a website was shown to influence the participants' behavioral intention to revisit the website. Bartl, Gouthier, and Lenker (2013) found that consumer delight experienced while using a website has a greater effect on purchase intention than customer satisfaction. For athletes, who rarely purchase their own sneakers due to gifting from athletic brands and product endorsements, the intent to purchase is effectively replaced by intent to wear. This variable encompasses the athlete's drive to don the shoes, not based on cost, but because of the shoes alone.

As previously stated, factors such as consumer delight have been shown to have an impact on purchase intentions (Wang, 2011). Based on this literature, it can be proposed that consumer delight could have an impact on wear intention, as it is a similar behavioral process to purchase intention. Although no research known to the author links perceived athletic performance, or even product performance, to wear intention, sport shoe experts such as Fuller (2015) have posited that a main focus in selecting athletic footwear is the goal of improved performance. In addition, Bloch's (1995) theory of consumer response to product form (discussed in the previous section) provides support for exploring the relationship between cognitive responses and approach behaviors, such as "extended viewing, listening, or touching of the product" (p. 20) or purchasing of the product, or avoidance behaviors, such as distancing oneself from or deciding not to purchase the product. The following research questions are proposed based on the preceding literature:

RQ4a: Does the basketball shoe's Kansei design feel significantly influence wear intention?

RQ4b: Does PAPE mediate the relationship between Kansei design feels of basketball shoes and athletes' wear intentions?

RQ4c: Does consumer delight mediate the relationship between Kansei design feels of basketball shoes and athletes' wear intentions?

CHAPTER III. METHODS

Research Strategy

This study employed an Internet survey (see Appendix A) using 100 images of basketball shoes as stimuli. For RQ 1, the design characteristics of colorway, strap feature, and ankle coverage served as the independent variables in this study, and the Kansei design feels of basketball shoes served as the dependent variable. For RQs 2, 3 and 4a, the Kansei design feels of basketball shoes served as the independent variable, and the cognitive, affective, and behavioral responses of PAPE, consumer delight, and wear intention, respectively, served as dependent variables. For RQs 4b and 4c, PAPE and consumer delight were analyzed as mediating variables in the relationship between Kansei design feels and the behavioral intention to wear the shoes. While the researcher was unable to control for color variations based on different computers used to take the questionnaire, this Internet survey strategy allowed for the collection of a much larger sample from all over the country that would not be possible in a more controlled environment. Prior to data collection, the researcher obtained approval from the Instituional Review Board (IRB; see Appendix B).

Sample and Sampling Procedure

The researcher recruited Millennial men born between 1980 and 1996 (Dimock, 2018) who play on intramural basketball teams at five large American universities from across the country: Duke University, The University of Tennessee, The University of Oregon, The University of Massachusetts, and The University of Maryland. Although the participating

universities were unable to provide exact numbers of students to which the questionnaire was sent, one university estimated there were approximately 2,000 students participating in their intramural basketball program per year; therefore, the researcher estimated that the sampling frame for this study was approximately 6,500 students, conservatively.

The intramural sports coordinators and institutional review boards of each participating university were contacted by the researcher and informed of the research study before they provided written consent of participation. The intramural coordinators were provided with web links to the questionnaire, which they sent out in an email to male students registered to play intramural basketball in the spring semester of 2018. According to an article published in the Washington Post, the Millennial generation is the largest consumer category driving sales in footwear, spending $21 billion in 2014 (Harwell, 2015). The sport of basketball was chosen because basketball sneakers, compared to football or soccer cleats, are known for their stylistic appearance and are often popular as lifestyle shoes (i.e., not only worn for sport) as well.

Stimuli

Stimuli were selected for this study employing methods commonly used in design research (Orth & Malkewitz, 2008) in which a group of two-dimensional images that are representative of all possible variations within the category and based on specified stimulus characteristics are chosen. Quota-based stimulus sampling was used to ensure that there was equal representation of the five design characteristics (colorway – primary color, number of colors, and midsole color; strap feature; and ankle coverage) and their variations. Following a methodologically similar study within the field of package design by Orth and Malkewitz (2008), this study aimed to include 100 representative stimuli reviewed by a product design professional. Basketball shoes from several different brands, including but not limited to Nike, Adidas, Under

Armour, Reebok, Fila, Puma, Air Jordan, and Ewing were included as these brands range in popularity within the basketball shoe market, and the logos were removed to avoid the influence of brand name on the proposed relationships. The images were uniform, taken from the external side view of the left shoe with a white background. Table 1 shows examples of this type of stimuli, while all 100 images used in the main study can be found in Appendix C. The researcher selected 130 stimuli images, which included at least 60 shoes with strap feature(s), 60 shoes without strap feature(s), 40 high top shoes, 40 mid top shoes, and 40 low top shoes. In addition, colorways were represented by selecting at least 17-18 images for each of the seven primary colors, 40 images for each number of color combinations (one, two, or three colors), 60 images with a matching midsole, and 60 images with a contrasting midsole. While this was subject to the availability of these shoe images in the marketplace, every effort was made to include as much variation as possible while removing color combinations that are associated with the universities participating in this study (i.e., orange/white for the University of Tennessee, dark red (maroon)/white/black for the University of Massachusetts, green/yellow for the University of Oregon, red/black/white for the University of Maryland, and blue/white for Duke University).

Once all stimuli were collected, the researcher and an independent coder unrelated to this study coded the stimuli images for the levels of the three design characteristics (see Table 2). The inter-coder reliability was 88%, and 12 stimulus images that could not be negotiated between the coders were completely removed. Next, a product design expert reviewed the images to ensure that there was adequate variation within the design characteristic groups and types of shoe styles or design feels shown. The final pool of stimuli was reduced from 135 to 100 to include the images that are most representative of the variance within the basketball shoe market

Table 1

Examples of Stimuli Images of Basketball Shoes by Design Characteristic

		Strap Feature	
		Strap	No Strap
Number of Colors	Single Color		
	Two Colors		
	Three Colors		
Midsole Color	Matc-hing		
	Con-trastin g		
Primary Color	Blue		
	White		

Table 1 (continued)

	Red		
	Yel-low		
	Green		
	Black		
	Or-ange		
Ankle Coverage	Low Top		
	Mid Top		
	High Top		

Note. All images retrieved on January 22, 2018, from nike.com, adidas.com, or undearmour.com.

Table 2

Example of coding sheet for stimulus design characteristics

Primary color	☐ Blue	☐ White	☐ Red	☒ Yellow	☐ Green	☐ Black	☐ Orange
Number of colors	☐ 1	☒ 2	☐ 3				
Midsole color	☐ Matching	☒ Con-trasting					
Strap feature	☒ Strap(s) present	☐ No strap					
Ankle Cover-age	☐ High top	☐ Mid top	☒ Low top				

Procedure

First, a pilot study with 10 male intramural basketball players from a large southeastern university reviewed only the new PAPE scale to ensure that it has content and face validity before proceeding with the study. These players provided verbal feedback on the scale in an informal focus group-style method in which they were asked if the scale made logical sense and if they felt it was reasonable for measuring the PAPE of a sports product. All feedback from

these players were positive, and no additional suggestions were provided; therefore, the researcher determined the scale had adequate content and face validity.

The main study data were collected online by providing the intramural coordinators with questionnaire web links to distribute to males registered for intramural basketball for the spring 2018 semester. Respondents viewed a randomly assigned full-color image of a basketball shoe out of a pool of 100 stimuli and rated it on a five-point semantic differential scale with 19 items using bipolar Kansei words. Following this activity, they responded to 12 items using a 5-point Likert scale anchored with "strongly disagree" and "strongly agree": five items for consumer delight, four items for PAPE, and three items for wear intention. This process was repeated until each respondent viewed and answered the items for 7 randomly assigned stimuli in total.

Respondents then answered several demographic questions related to age, race, socioeconomic status, university affiliation, how long they have been playing basketball, self-perceived basketball skill level, and purchase behaviors of basketball shoes. Respondents also answered 5 additional variables with two items each for product likeability, product fashionability, perceived product performance, and purchase intent, and the scale for centrality of visual product aesthetics (CVPA; Bloch, Brunel, & Arnold, 2003) to collect data that are outside of the scope of this thesis. Respondents were given an unlimited amount of time for the questionnaire to facilitate careful consideration of the stimuli, although the majority completed the questionnaire in under 10 minutes. Following completion of the questionnaire, respondents were thanked for their participation, provided with the contact information of the researcher, and were given the option to provide their email address to enter to win one of 20 gift cards worth $20 each.

Measures

The questionnaire given to respondents consisted of a series of measurements for Kansei words, consumer delight, PAPE, wear intention, product likeability and fashionability, and perceived product performance. Each randomly assigned stimulus was measured using each of these variables. A demographics section followed the completion of stimuli measures (see Appendix A for the questionnaire).

Kansei words. Shieh and Yeh's (2015) 19 Kansei word pairs for sport shoes were used to gain understanding of the respondents' impressions of the product form of basketball shoes. These researchers used 20 word pairs, but the word pair of like-dislike was removed for the current study as it was determined to reflect product likeability, which was reflected in a later measurement. These word pairs were determined through expert interviews and an environmental scan of the sports shoe market, which provides evidence for validity and is the suggested method by Nagamachi (1995), the creator of the Kansei engineering method. Some examples of these word pairs are simple-complex, modern-retro, or striking-mediocre. A complete list of these word pairs can be found in Table 8 in Chapter 3. Respondents were asked how they would describe the shoe before selecting their choices on 19 5-point semantic differential scales, anchored by the Kansei word pairs. The word pairs of traditional:technological and simple:complex were reverse coded to match the direction of the other word pairs.

Consumer delight. Five items from De Almeida and Nique's (2005) affective aspects factor for their consumer delight scale were adapted for this study. The full scale consists of five factors: affective aspects (10 items), cognitive aspects (five items), post-consumption evaluation (three items), positive surprise (three items), and personalization (two items). The factors for

personalization, post-consumption evaluation, and cognitive aspects were removed as their items were determined to be irrelevant for this study. The factor for positive surprise was also removed as recent literature on the consumer delight construct states that the emotion of surprise is not necessary for delight to be achieved (Kumar et al., 2001). The five highest loading items for the affective aspects factor of consumer delight were chosen for this study. The respondents were instructed to indicate their level of agreement (anchored by "strongly disagree" and "strongly agree") on a 5-point Likert type scale with the following five adapted statements: *this shoe brought me joy; this is a stimulating shoe; this shoe transmitted positive feelings to me; this shoe brought me pleasure;* and *this shoe brought me happiness.* In De Almeida and Nique's (2005) scale development study, the composite reliability and average variance extracted for the affective dimension were .9749 and .6880 respectively.

PAPE. No scales have ever been created to measure PAPE; therefore, this construct was measured using four items created by the researcher based on measures of actual basketball performance activities used in previous research (Lam et al., 2017; Puente et al., 2017). Respondents were instructed to indicate their level of agreement (anchored by "strongly disagree" and "strongly agree") on a 5-point Likert scale with the following four statements: *I believe that wearing this shoe will improve my basketball performance; I believe that wearing this shoe will improve my performance in a basketball jumping activity; I believe that wearing this shoe will improve my performance in a basketball sprinting activity;* and *I believe that wearing this shoe will improve my performance in a basketball shooting activity*. This new scale was analyzed for validity and reliability during the pilot study and main study questionnaire.

Wear intention. Wear intention was measured using three items adapted from Baker and Churchill Jr. (1977) for behavioral intention for a product. These items are the respondents'

intention to buy a product, seek out a product, and try a product and are measured on a 7-point semantic differential scale anchored by the bipolar adjectives of "definitely" and "definitely not" ($\alpha = .85$). The item wording was adapted to be specifically related to wear intention and was measured on a 5-point Likert-type scale using levels of agreement (anchored by "strongly disagree" and "strongly agree"). The items used in this study for wear intention were the following: *I would like to try this shoe while I play basketball; I would wear this shoe if it was given to me to play basketball in;* and *I would actively seek out this shoe in order to wear it while playing basketball.*

CHAPTER IV. RESULTS

Sample Description

The demographics of the sample (see Table 3) were calculated using descriptive statistics in SPSS. The final sample for this study consisted of 170 Millennial males enrolled in intramural basketball programs at the five participating universities during the spring semester of 2018. The participating sample was 173 respondents; however, the data from three respondents were removed because one was female and the other two were not members of the Millennial generation (born between 1981 and 1996; Dimock, 2018). No respondents were deleted due to missing data; hence, the final sample was 170 respondents. The final sample was 100% male and the average age was 21.0 years; respondents ranged in age from 18 to 33 years old. The majority of students (48%) were third or fourth year undergraduates, and 68.2% of respondents were Caucasian. Interestingly, 66.5% of respondents claimed to play basketball several times per week, and 71.2% said they have been playing basketball for 10 years or more. In addition, 44.7% of respondents purchased new basketball shoes at least once per year at an average price of about $125 per pair. Based on these characteristics of the final sample, it can be determined that the respondents were highly involved in both the sport of basketball and in the purchase of basketball shoes.

Table 3

Sample Characteristics

	f	%	*M*	*SD*
University Affiliation (*n* = 170)				
University of Oregon	91	53.5%		
University of Maryland	38	22.4%		
Duke University	34	20.0%		
University of Tennessee	4	2.4%		
University of Massachusetts	3	1.8%		
Age (*N* = 170)			21.0	2.79
18	22	12.9%		
19	33	19.4%		
20	31	18.2%		
21	32	18.8%		
22	20	11.8%		
23	7	4.1%		
24	9	5.3%		
25-33	16	9.4%		
Gender (*N* = 170)				
Male	170	100%		
Female	0	0%		
Education Level (*N* = 170)				
Freshman	34	20.0%		
Sophomore	24	14.1%		
Junior	51	30.0%		
Senior	32	18.8%		
Graduate Student	26	15.3%		
Other	3	1.8%		
Ethnicity (*N* = 170)				
Non-Hispanic White	116	68.2%		
Asian/Pacific Islander	25	14.7%		
Non-Hispanic Black	12	7.1%		
Hispanic/Latino	11	6.5%		
Other	5	2.9%		
American Indian/Alaskan Native	1	0.6%		
Basketball Play Frequency (*N* = 170)				
Less than once a month	1	0.6%		
Once a month	2	1.2%		
A few times a month	18	10.6%		
Once a week	36	21.2%		
A few times a week	102	60.0%		
Once a day	7	4.1%		
More than once a day	4	2.4%		
Basketball Play Length (*N* = 170)				
Less than one year	3	1.8%		
One to three years	10	5.9%		

Table 3 (continued)

Four to six years	19	11.2%		
Seven to nine years	17	10.0%		
Ten years or more	121	71.2%		
Average Spent Per Pair of Basketball Shoes (N = 170)			$124.60	39.85
$0 - $50	3	1.8%		
$51 - $100	54	31.8%		
$101 - $150	83	48.8%		
$151 - $200	24	14.1%		
$201 - $250	6	3.5%		
Frequency of Basketball Shoe Purchases (N = 170)				
Less than once a year	88	51.8%		
Every 9-12 months	41	24.1%		
Every 5-8 months	28	16.5%		
Every 1-4 months	7	4.1%		
I do not purchase basketball shoes	6	3.5%		

Note. Average spent per pair of basketball shoes collected as actual amounts but reported as intervals.

Validity and Reliability Analyses

The respondent data were pooled across all stimuli to calculate scale reliabilities using the Cronbach's *alpha* coefficient for consumer delight, PAPE, and wear intention. All scales had an adequate reliability ($\alpha > .70$; see Tables 4-6); therefore, the items were combined and the average scores for each scale were used for further analysis. An exploratory factor analysis with Principal Components Analysis and Varimax rotation was used to ensure that each scale was unidimensional. Tables 4, 5, and 6 show the results of the factor analyses, indicating that the scales for consumer delight, PAPE, and wear intention are unidimensional, respectively.

Table 4

Factor Loading for Unidimensionality of Consumer Delight Scale (*n* = 1281)

	Factor Loading
Scale Item	Component 1
This shoe brought me pleasure.	.927
This shoe brought me happiness.	.921
This shoe brings me joy.	.913
This shoe transmitted positive feelings to me.	.913
This is a stimulating shoe.	.766
Eigenvalue	3.961
Percentage of total variance	79.216
Cronbach's α	.932

Table 5

Factor Loading for Unidimensionality of PAPE Scale (*n* = 1281)

	Factor Loading
Scale Item	Component 1
I believe that wearing this shoe will improve my basketball performance.	.929
I believe that wearing this shoe will improve my performance in a basketball jumping activity.	.921
I believe that wearing this shoe will improve my performance in a basketball shooting activity.	.907
I believe that wearing this shoe will improve my performance in a basketball sprinting activity.	.906
Eigenvalue	3.355
Percentage of total variance	83.873
Cronbach's α	.936

Table 6

Factor Loading for Unidimensionality of Wear Intention Scale (n = 1281)

	Factor Loading
Wear Intention Scale Item	Component 1
I would like to try this shoe while I play basketball.	.932
I would wear this shoe if it was given to me to play basketball in.	.893
I would actively seek out this shoe in order to wear it while playing basketball.	.854
Eigenvalue	2.396
Percentage of total variance	79.860
Cronbach's α	.874

Research Question Results

Similar to the study by Orth and Malkewitz (2008), the analysis for all research questions in the current study is at the stimulus × respondent level instead of the respondent level to determine the design characteristics and their associated Kansei words that form Kansei design feels, as well as how the design feels influence consumer delight, PAPE, and wear intention. Therefore, the sample size of 1281 reflects the pooled data from all respondents who rated the 100 stimuli, with a range of 8 to 25 and an average of 13 respondents rating each stimulus. The creation of stimulus × respondent level data from respondent level data inflates the sample size; however, this approach was deemed necessary to answer all the research questions posed in this study, which were at the stimulus level and not at the respondent level.

RQ1a: Kansei design feels. This research question sought to explore what Kansei design feels can be identified based on the elicited feelings (Kansei words) from basketball shoes. To answer this question, an exploratory factor analysis (EFA) using Principal Components Analysis extraction and Varimax rotation was run to see how the 19 Kansei word pairs would be grouped. Table 8 shows the creation of four design feels, which were renamed based on their associated word pairs loading on each extracted factor. These design feels were also analyzed for reliability

using Cronbach's α, also shown in Table 7. The first design feel was named the Boldness design feel (α =.811) as the loading word pairs tended to be related to loud, eye-catching design features such as vivacious:quiet, bright:dull, and obtrusive:modest. The Structural design feel (α = .641) was made up of four word pairs related to the shoes' literal construction through features like thickness or fragility. The third factor was named the Ergonomic design feel (α = .526), describing the perceived level of comfort or safety of the shoes through word pairs such as comfortable:tight, compliant:rigid, or safe:dangerous. Finally, the fourth factor was named the Formality design feel (α = .450) and included the word pairs of formal:casual, elegant:unrefined, and mature:young. This design feel was not included in the data analysis due to an inadequate reliability.

According to a meta-analysis of coefficient alpha by Schmitt (1996), low reliabilities under the generally accepted cut off of .70 can still be accepted when the factor or measure contains content meaningful to the concept and is unidimensional; therefore, the three design feels with reliabilities above .50 were maintained because their meaning was conceptually valid and relevant. All items for each design feel were maintained because their factor loadings were all above the recommended minimum item loading of .32 by Tabachnick and Fidell (2001), and although some items cross loaded and individual item analyses indicated that two of the factor reliabilities would increase slightly after deleting items (see Table 8), these items were not deleted in order to maintain the conceptual integrity of the design feels. For example, the word pair of cheap:expensive had the highest loading on the Boldness design feel while also loading adequately on the Formality design feel. This indicates that, while increased cost of basketball shoes relates to perceptions of formality in the minds of respondents, expensive shoes are even more so related to perceptions of boldness and brightness. In other words, when basketball shoes

Table 7

Factor Loadings for Kansei Word Pairs (*n* = 1281)

Kansei Word Pairs	Factor Loadings			
	Component 1: Boldness	Component 2: Structural	Component 3: Ergonomic	Component 4: Formality
Quiet:Vivacious	**.766**			
Dull:Bright	**.727**			
Mediocre:Striking	**.693**			
Traditional:Technological	**.661**			
Simple:Complex	**.619**			
Retro:Modern	**.596**			
Modest:Obtrusive	**.587**			
Cheap:Expensive	**.542**			.479
Thin:Thick		**.772**		
Fragile:Sturdy		**.744**		
Delicate:Rough		**.658**	-.314	
Female:Male		**.471**		
Tight:Comfortable			**.715**	
Rigid:Compliant			**.636**	
Dangerous:Safe		.305	**.592**	
Sharp:Rounded			**.484**	
Casual:Formal				**.655**
Unrefined:Elegant			.442	**.597**
Young:Mature	-.353			**.556**
Eigenvalue	3.742	2.298	2.186	1.742
Percentage of total variance	19.694	12.092	11.508	9.169
Cronbach's α	.811	.641	.526	.450

Note. Highest item loadings for each factor appear in bold. Factor loadings below .30 are suppressed.

are highly bold and striking, athletes associate the shoes with increased cost even more than shoes that are meant to be formal or elegant; therefore, maintaining this word pair despite its cross loading is integral to the factor concepts. Similarly, while removing the female:male and sharp:rounded word pairs could slightly increase their associated factor reliabilities, the increase is small compared to the conceptual value these word pairs hold; for example, the female:male word pair is attaching human characteristics to a non-human object and reveals that "masculine" shoes are associated with structure and thickness, while "feminine" shoes (despite the fact that

the sample was all male) are associated with the opposite, and possibly the reduction of weight. These cross loading and low loading word pairs reveal interesting findings that are specific to basketball shoes, therefore all are maintained. A new composite variable for each of the remaining three design feels was created based on the average scores for the associated Kansei word pairs for each stimulus; these new design feel variables were used in all further analyses.

Table 8

Item Analysis for Design Feel Reliability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's α if Item Deleted
Boldness (α = .811)				
Quiet:Vivacious	23.3	29.1	.7	.771
Dull:Bright	23.2	28.5	.6	.778
Mediocre:Striking	23.5	29.6	.6	.780
Traditional:Technological	23.6	30.5	.5	.787
Simple:Complex	23.9	30.6	.5	.795
Retro:Modern	23.4	30.7	.5	.797
Modest:Obtrusive	23.6	32.1	.4	.801
Cheap:Expensive	23.5	31.7	.4	.801
Structural (α = .641)				
Thin:Thick	10.3	4.2	.5	.495
Fragile:Sturdy	10.1	4.7	.5	.523
Delicate:Rough	10.5	5.2	.4	.571
Female:Male	9.9	5.9	.3	**.669**
Ergonomic (α = .526)				
Tight:Comfortable	9.8	4.5	.4	.369
Rigid:Compliant	10.0	4.8	.3	.450
Dangerous:Safe	9.7	4.9	.3	.449
Sharp:Rounded	9.7	4.9	.2	**.542**
Formality (α = .450)				
Casual:Formal	5.7	2.9	.3	.330
Unrefined:Elegant	5.2	2.9	.3	.371
Young:Mature	5.4	2.6	.3	.358

Note. Items that would increase reliability if deleted appear in bold. All items maintained for conceptual integrity of the factors and their removal would not greatly increase reliability.

RQ1b: This research question sought to examine the linkages between the design characteristics that make up the product form of basketball shoes (colorway – hue, number of colors and midsole color, strap feature, and ankle coverage) and the Kansei design feels. A multivariate analysis of variance (MANOVA) with univariate ANOVAs and Tukey post hoc analyses, using the five design characteristics' levels of each stimulus (as coded through the coding process during stimulus selection; see Table 2) as independent variables and the mean scores on the three Kansei design feels as dependent variables, revealed significant multivariate and univariate main and interaction effects of various design characteristics on the design feels. There were significant main effects of primary color [Wilk's $\lambda = .895$, $F(18, 3428) = 7.581$, $p < .001$, partial $\eta^2 = .036$], number of colors [Wilks $\lambda = .984$, $F(6, 2424) = 3.270$, $p = .003$, partial $\eta^2 = .008$], and ankle coverage [Wilks $\lambda = .960$, $F(6, 2424) = 8.399$, $p < .001$, partial $\eta^2 = .020$] on the design feels. In addition, there were significant multivariate interaction effects of primary color and number of colors [Wilks $\lambda = .984$, $F(9, 2950) = 2.141$, $p = .023$, partial $\eta^2 = .005$], primary color and strap feature [Wilks $\lambda = .964$, $F(18, 3429) = 2.492$, $p < .001$, partial $\eta^2 = .012$], and primary color and ankle coverage [Wilks $\lambda = .918$, $F(33, 3571) = 3.176$, $p < .001$, partial $\eta^2 = .028$] on the design feels. The main effects of midsole color [Wilks $\lambda = .996$, $F(3, 1212) = 1.756$, $p = .154$, partial $\eta^2 = .004$] and strap feature [Wilks $\lambda = .999$, $F(3, 1212) = .544$, $p = .652$, partial $\eta^2 = .001$], as well as all other interaction effects, were found to be non-significant. The full MANOVA results for multivariate main and interaction effects can be found in Appendix D.

To ascertain which of the dependent variables contributed to the overall significant multivariate main and interaction effects, univariate analyses of variance were examined. As shown in Table 9, the main effects of primary color were significant for all three design feels,

while number of colors was significant for only the Boldness design feel, and ankle coverage was significant for the Boldness and Structural design feels. The primary color and number of colors interaction effect and the primary color and strap feature interaction effect were both solely significant on the Structural design feel. Lastly, the interaction between primary color and ankle coverage had significant effects on both the Boldness and Structural design feels. All other main and interaction effects were non-significant and not included in further analyses due to their non-significant multivariate effects.

Pairwise comparisons (Tukey) revealed that for the Boldness design feel perception, significant differences ($p < .05$) were found between blue and red, blue and yellow, blue and orange, white and red, white and yellow, white and green, white and orange, red and black, yellow and green, yellow and black, green and black, green and orange, and black and orange (see Tables 10a). Shoes with the color yellow were found to be significantly higher on the Boldness design feel than all other colors; orange was the second most "bold" color, although it was not significantly different from yellow on this factor. Black was perceived as the least "bold" color, preceded by the color white, although there was no significant difference between the two. Although color significantly impacted the Structural and Ergonomic design feels, no significant differences were found amongst any of the colors. Tables 10a, 10b, and 10c show all pairwise comparisons for primary color on each design feel with results significant at the $p < .05$ level noted with an asterisk and results significant at the $p < .001$ level marked with double asterisks. Figure 4 visually shows the rank order of colors from least to most bold perceptions, although there were no significant differences from one color to the next in this order.

Table 9

Univariate ANOVA Results Underlying Significant MANOVA Results

Effect and Dependent Measure	***SS***	***df***	***F***	***p***	**partial η2**
Primary Color (PC)					
Boldness	52.04	6	18.60	< .001**	.084
Structural	5.75	6	2.21	.039*	.011
Ergonomic	6.65	6	2.56	.018*	.012
Number of Colors (NC)					
Boldness	5.56	2	5.96	.003*	.010
Structural	1.83	2	2.12	.121	.003
Ergonomic	1.23	2	1.42	.241	.002
Ankle Coverage (F)					
Boldness	5.84	2	6.26	.002*	.010
Structural	14.80	2	17.11	< .001**	.027
Ergonomic	1.63	2	1.88	.153	.003
PC x NC					
Boldness	1.85	3	1.32	.266	.003
Structural	3.51	3	2.71	.044*	.007
Ergonomic	3.15	3	2.42	.064	.006
PC x S					
Boldness	4.67	6	1.67	.126	.008
Structural	11.56	6	4.45	< .001**	.022
Ergonomic	3.52	6	1.35	.231	.007
PC x A					
Boldness	23.47	11	4.57	< .001**	.040
Structural	16.18	11	3.40	< .001**	.030
Ergonomic	6.34	11	1.33	.202	.012
Error					
Boldness	566.24	1214			
Structural	525.35	1214			
Ergonomic Factor	526.21	1214			

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

Table 10a

Post Hoc Tests (Tukey) for Pairwise Comparisons between Primary Colors for Boldness Design Feel

Primary Color			Primary Color													
			Blue		White		Red		Yellow		Green		Black		Orange	
	M	*SE*	MD	Sig.	MD	Sig.	MD	Sig.	MD	Sig.	MD	Sig.	MD	Sig.	MD	Sig.
Blue	3.195	.055			-.108	1.000	.306	.002*	.533	< .001**	.149	1.000	-.215	.221	.439	< .001**
White	3.087	.056	.108	1.000			.414	< .001**	.641	< .001**	.257	.022*	-.107	1.000	.546	< .001**
Red	3.501	.057	-.306	.002*	-.414	< .001**			.227	.064	-.157	1.000	-.521	< .001**	.132	1.000
Yellow	3.728	.050	-.533	< .001**	-.641	< .001**	-.227	.064			-.384	< .001**	-.748	< .001**	-.095	1.000
Green	3.344	.055	-.149	1.000	-.257	.022*	.157	1.000	.384	< .001**			-.364	< .001**	.289	.005*
Black	2.980	.064	.215	.221	.107	1.000	.521	< .001**	.748	< .001**	.364	< .001**			.653	< .001**
Orange	3.634	.057	-.439	< .001**	-.546	< .001**	-.132	1.000	.095	1.000	-.289	.005*	-.653	< .001**		

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

Table 10b

Post Hoc Tests (Tukey) for Pairwise Comparisons between Primary Colors for Structural Design Feel

Primary Color			Primary Color													
			Blue		White		Red		Yellow		Green		Black		Orange	
	M	*SE*	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig
Blue	3.422	.053			-.009	1.000	.042	1.000	-.134	1.000	.071	1.000	.055	1.000	-.045	1.000
White	3.412	.054	.009	1.000			.052	1.000	-.125	1.000	.080	1.000	.064	1.000	-.036	1.000
Red	3.464	.055	-.042	1.000	-.052	1.000			-.177	.347	.028	1.000	.013	1.000	-.088	1.000
Yellow	3.287	.049	.134	1.000	.125	1.000	.177	.347			.205	.090	.189	.326	.089	1.000
Green	3.492	.053	-.071	1.000	-.080	1.000	-.028	1.000	-.205	.090			-.016	1.000	-.116	1.000
Black	3.477	.061	-.055	1.000	-.064	1.000	-.013	1.000	-.189	.326	.016	1.000			-.100	1.000
Orange	3.376	.055	.045	1.000	.036	1.000	.088	1.000	-.089	1.000	.116	1.000	.100	1.000		

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

Table 10c

Post Hoc Tests (Tukey) for Pairwise Comparisons between Primary Colors for Ergonomic Design Feel

Primary Color			Primary Color													
			Blue		White		Red		Yellow		Green		Black		Orange	
	M	*SE*	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig	MD	Sig
Blue	3.327	.053			-.035	1.000	-.021	1.000	-.068	1.000	-.176	.390	.060	1.000	-.168	.577
White	3.292	.054	.035	1.000			.014	1.000	-.033	1.000	-.140	1.000	.095	1.000	-.133	1.000
Red	3.306	.055	.021	1.000	-.014	1.000			-.047	1.000	-.155	.915	.081	1.000	-.147	1.000
Yellow	3.259	.049	.068	1.000	.033	1.000	.047	1.000			-.107	1.000	.128	1.000	-.100	1.000
Green	3.152	.053	.176	.390	.140	1.000	.155	.915	.107	1.000			.236	.076	.008	1.000
Black	3.388	.061	-.060	1.000	-.095	1.000	-.081	1.000	-.128	1.000	-.236	.076			-.228	.119
Orange	3.160	.055	.168	.577	.133	1.000	.147	1.000	.100	1.000	-.008	1.000	.228	.119		

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

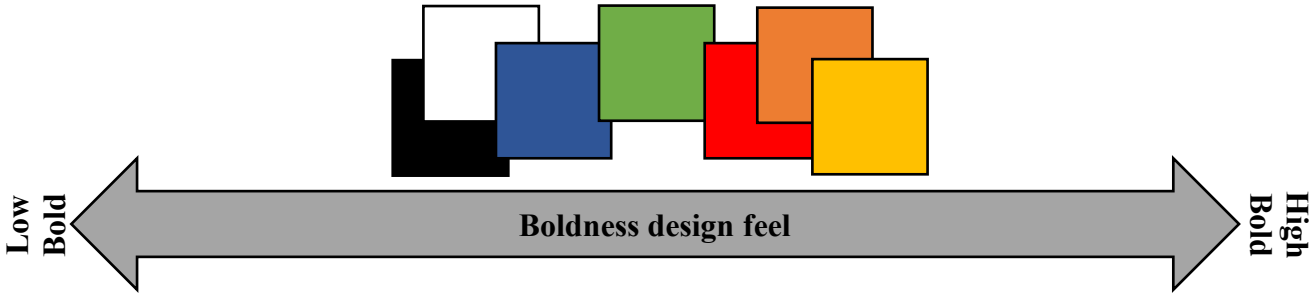

Figure 4. Rank order for basketball shoe colors on the Boldness design feel based on descriptive statistics. Overlapping color chips represent non-significant differences, while colors not overlapping represent significant differences.

For the effect of the number of colors design characteristic, significant differences were revealed in the pairwise comparisons between one and two colors ($p < .001$) and between one and three colors ($p = .025$) for the Boldness design feel (see Table 11 and Figure 5). No significant differences in boldness were perceived between shoes with two colors and shoes with three colors. Shoes with multiple colors were considered significantly bolder than shoes with a single color.

Table 11

Post Hoc Tests (Tukey) for Pairwise Comparisons between Number of Colors

	Number of Colors							
	1		2		3			
Dependent Variable	*M*	*SE*	*M*	*SE*	*M*	*SE*	Mean Diff.	Sig.
Boldness	3.229	.037	3.467	.036			-.237	< .001**
			3.467	.036	3.369	.037	.097	.181
	3.229	.037			3.369	.037	-.140	.025*

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

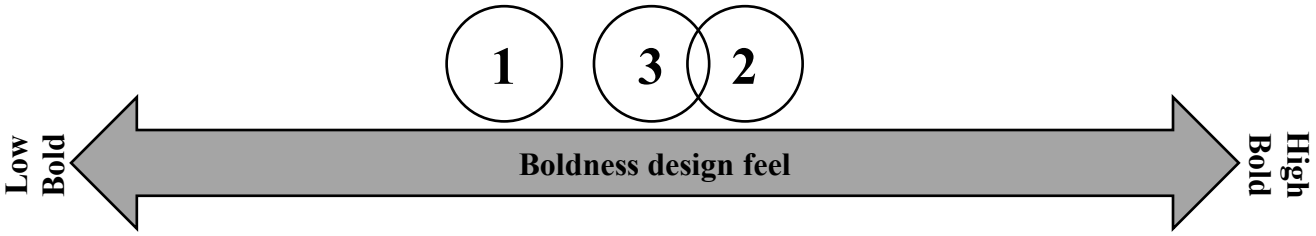

Figure 5. Rank order for the number of colors on the Boldness design feel based on descriptive statistics. Overlapping circles represent non-significant differences, while circles not overlapping represent significant differences.

Lastly, there were significant differences between levels of ankle coverage for the Structural design feel, but not for the Boldness design feel (see Table 12); the Structural design feel was perceived to be significantly different between the low-top shoes and the mid- or high-top shoes (both $p < .001$). Low top shoes scored the lowest on the Structural design feel. Although mid tops scored higher than high tops on both factors, the differences were not significant. Figure 6 shows the rank order of the ankle heights on the Structural design feel, although mid tops were not significantly more structural than high tops.

Table 12

Post Hoc Tests (Tukey) for Pairwise Comparisons between Ankle Coverages

	Ankle Coverage							
	Low		Mid		High			
Dependent Variable	*M*	*SE*	*M*	*SE*	*M*	*SE*	Mean Diff.	Sig.
Boldness	3.302	.038	3.414	.036			-.112	.100
			3.414	.036	3.354	.036	.060	.725
	3.302	.038			3.354	.036	-.052	.967
Structural	3.216	.037	3.521	.035			-.306	< .001**
			3.521	.035	3.480	.035	.041	1.000
	3.216	.037			3.480	.035	-.265	< .001**

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

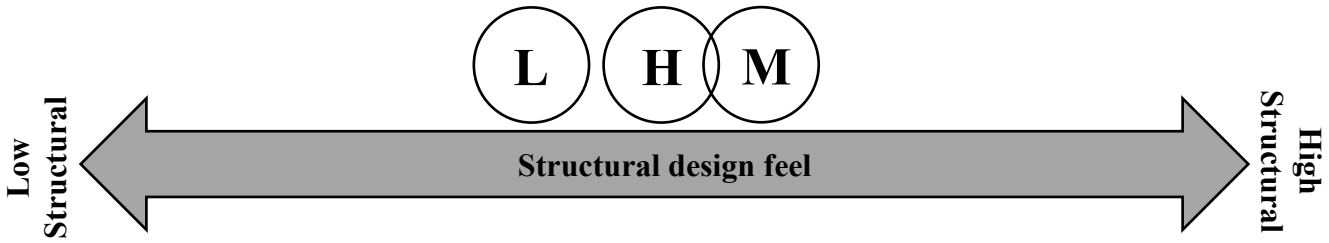

Figure 6. Rank order for ankle coverage on the Structural design feel based on descriptive statistics. Overlapping circles represent non-significant differences, while circles not overlapping represent significant differences.

Significant interaction effects were also found for primary color and number of colors, primary color and strap feature, and primary color and ankle coverage (see Tables 13-16). For the primary color and number of colors interaction effect on the Structural design feel (see Table 13 and Figure 7), three colors were perceived to be significantly more structural than one color ($p = .001$) and two colors ($p = .008$) when the shoe's primary color was white. When the primary color was yellow, one color was perceived to be significantly more structural than two colors ($p = .008$) and three colors ($p < .001$). Green shoes were perceived to be significantly more structural when they had one color compared to two ($p < .001$) and three ($p < .001$).

The interaction effect of primary color and strap feature on the Structural design feel (see Table 14, Figure 8) only revealed one significant effect: when the shoe was white and had a strap or multiple straps, it was perceived to have a significantly higher structural feel than when the shoe was white and did not have a strap ($p = .002$).

Lastly, there was a significant interaction effect of primary color and ankle coverage on the Boldness (see Table 15 and Figure 9) and Structural (see Table 16 and Figure 10) design feel perceptions. White shoes were perceived to be significantly bolder when they had a high or mid top than when they had a low top (both $p < .001$). Black shoes were considered bolder when they had a high top compared to a low top ($p < .001$) or a mid top ($p = .043$). In contrast, if a shoe is orange, it was seen as significantly bolder when it had a low top ($p = .021$) or a mid top ($p =$

.016) compared to when it had a high top. Red shoes with mid tops were perceived to be significantly more structural than red shoes with low tops ($p = .026$), while yellow shoes with high tops were significantly more structural than when they had low tops ($p < .001$) or mid tops ($p = .001$). Low top yellow shoes were significantly less structural than yellow shoes with mid or high tops ($p < .001$). When the shoes were green, mid tops were perceived to be significantly more structural than low tops ($p < .001$) or high tops ($p = .005$). Finally, orange shoes with high tops were perceived to be significantly more structural than orange shoes with low tops ($p < .001$).

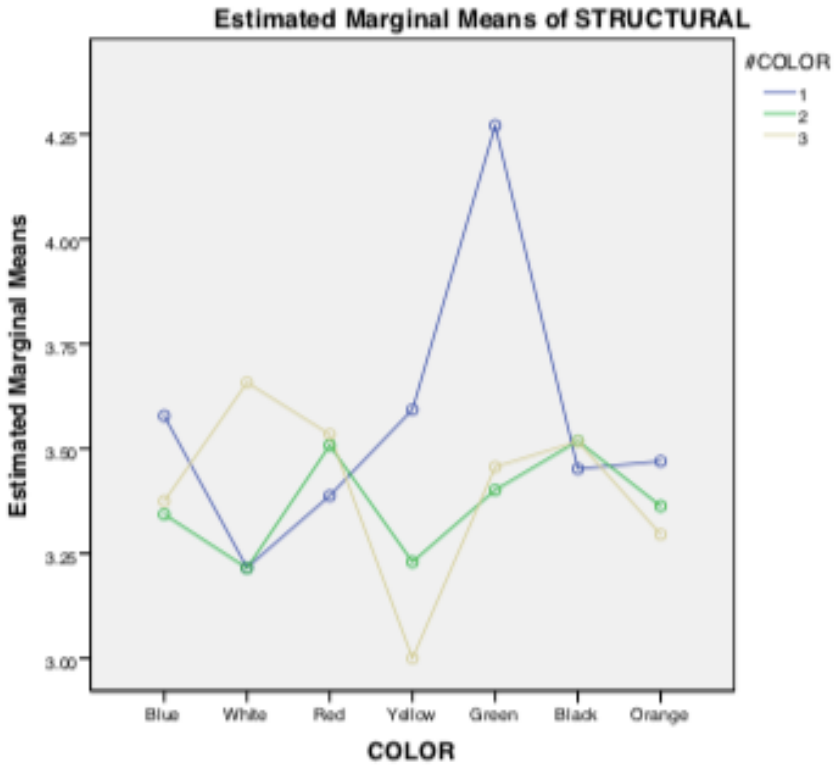

Figure 7. Interaction effect of color*number of colors on Structural design feel using Bonferroni adjustment.

Table 13

*Pairwise Comparisons for Primary Color*Number of Colors Interaction Effect with Bonferroni Adjustment*

Dependent Variable	Primary Color	Number of Colors						Mean Diff.	Sig.
		1		2		3			
		M	*SE*	*M*	*SE*	*M*	*SE*		
Structural	Blue	3.578	.089	3.343	.114			.235	.314
				3.343	.114	3.375	.077	-.031	1.000
		3.578	.089			3.375	.077	.203	.248
	White	3.216	.083	3.215	.118			.001	1.000
				3.215	.118	3.658	.086	-.443	.008*
		3.216	.083			3.658	.086	-.442	.001*
	Red	3.388	.080	3.508	.084			-.120	.889
				3.508	.084	3.534	.127	-.026	1.000
		3.388	.080			3.534	.127	-.147	.985
	Yellow	3.593	.100	3.230	.067			.363	.008*
				3.230	.067	3.000	.094	.230	.140
		3.593	.100			3.000	.094	.593	< .001**
	Green	4.271	.190	3.401	.067			.869	< .001**
				3.401	.067	3.457	.095	-.055	1.000
		4.271	.190			3.457	.095	.814	< .001**
	Black	3.452	.080	3.518	.103			-.066	1.000
				3.518	.103	3.517	.130	-.055	1.000
		3.452	.080			3.517	.130	-.065	1.000

Table 13 (continued)

Orange	3.470	.104	3.363	.101			.107	1.000
			3.363	.101	3.296	.077	.067	1.000
	3.470	.104			3.296	.077	.174	.536

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

Table 14

*Pairwise Comparisons for Primary Color*Strap Interaction Effect with Bonferroni Adjustment*

		(I) Strap		(J) No Strap			
Dependent Variable	Primary Color	*M*	*SE*	*M*	*SE*	Mean Diff. (I – J)	Sig.
Structural	Blue	3.682	.080	3.205	.069	.477	< .001**
	White	3.215	.089	3.511	.068	-.296	.008*
	Red	3.564	.092	3.389	.068	.175	.128
	Yellow	3.284	.087	3.289	.058	-.005	.962
	Green	3.502	.088	3.485	.065	.017	.876
	Black	3.557	.075	3.342	.105	.215	.096
	Orange	3.304	.176	3.385	.058	-.082	.659

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

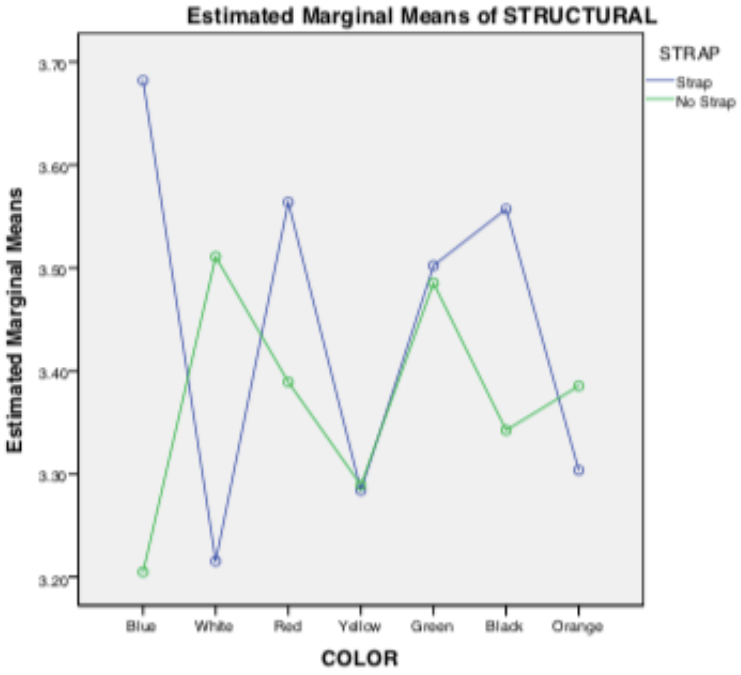

Figure 8. Interaction effect of color*strap on Structural design feel using Bonferroni adjustment.

Table 15

*Pairwise Comparisons for Primary Color*Ankle Interaction Effect on Boldness Design Feel with Bonferroni Adjustment*

	Ankle Coverage							
	Low		Mid		High			
Primary Color	*M*	*SE*	*M*	*SE*	*M*	*SE*	Mean Diff.	Sig.
Blue	3.067	.100	3.334	.096			-.267	.165
			3.334	.096	3.168	.081	.165	.569
	3.067	.100			3.168	.081	-.102	1.000
White	2.461	.097	3.181	.107			-.720	< .001**
			3.181	.107	3.330	.084	-.149	.826
	2.461	.097			3.330	.084	-.869	< .001**

Table 15 (continued)

Red	3.422	.107	3.500	.112			-.078	1.000
			3.500	.112	3.556	.086	-.056	1.000
	3.422	.107			3.556	.086	-.134	.987
Yellow	3.758	.098	3.725	.066			.033	1.000
			3.725	.066	3.695	.126	.030	1.000
	3.758	.098			3.695	.126	.063	1.000
Green	3.466	.103	3.213	.084			.253	.168
			3.213	.084	3.401	.098	-.188	.440
	3.466	.103			3.401	.098	.064	1.000
Black	2.723	.101	2.869	.157			-.146	1.000
			2.869	.157	3.311	.088	-.442	.043*
	2.723	.101			3.311	.088	-.588	< .001**
Orange	3.709	.084	3.748	.100			-.039	1.000
			3.748	.100	3.311	.120	.437	.016*
	3.709	.084			3.311	.120	.398	.021*

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

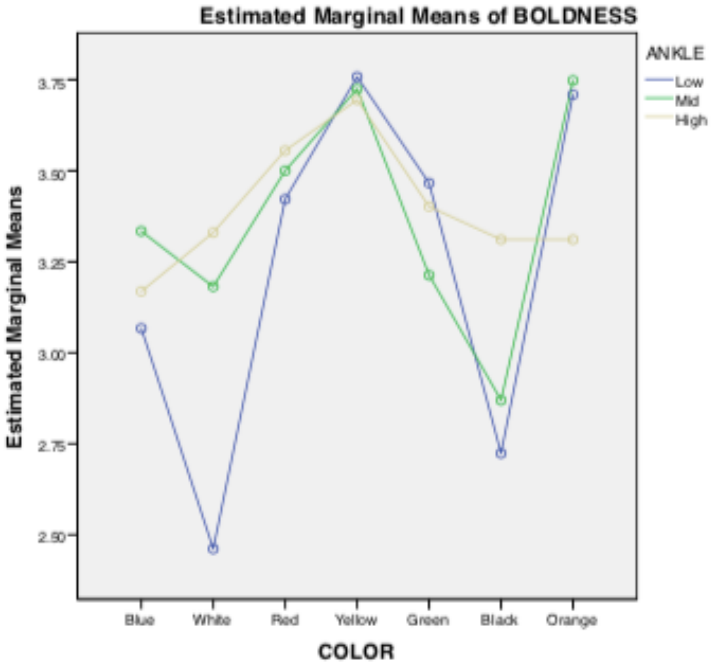

Figure 9. Interaction effect of color*ankle on the Boldness design feel using Bonferroni adjustment.

Table 16

*Pairwise Comparisons for Primary Color*Ankle Interaction Effect on Structural Design Feel with Bonferroni Adjustment*

	Ankle Coverage							
	Low		Mid		High			
Primary Color	*M*	*SE*	*M*	*SE*	*M*	*SE*	Mean Diff.	Sig.
Blue	3.264	.096	3.363	.093			-.099	1.000
			3.363	.093	3.504	.078	-.141	.736
	3.264	.096			3.504	.078	-.240	.160
White	3.427	.094	3.487	.103			-.060	1.000
			3.487	.103	3.349	.081	.137	.889
	3.427	.094			3.349	.081	.077	1.000

Table 16 (continued)

Red	3.309	.103	3.701	.108			-.392	.026*
			3.701	.108	3.409	.083	.292	.096
	3.309	.103			3.409	.083	-.100	1.000
Yellow	2.854	.095	3.324	.064			-.469	< .001**
			3.324	.064	3.827	.121	-.504	.001*
	2.854	.095			3.827	.121	-.973	< .001**
Green	3.259	.098	3.756	.081			-.497	< .001**
			3.756	.081	3.365	.095	.391	.005*
	3.259	.098			3.365	.095	-.106	1.000
Black	3.372	.097	3.775	.151			-.403	.075
			3.775	.151	3.382	.085	.393	.070
	3.372	.097			3.382	.085	-.009	1.000
Orange	3.149	.081	3.430	.096			-.281	.078
			3.430	.096	3.750	.116	-.319	.103
	3.149	.081			3.750	.116	-.601	< .001**

Note. * Significant at $p < .05$. ** Significant at $p < .001$.

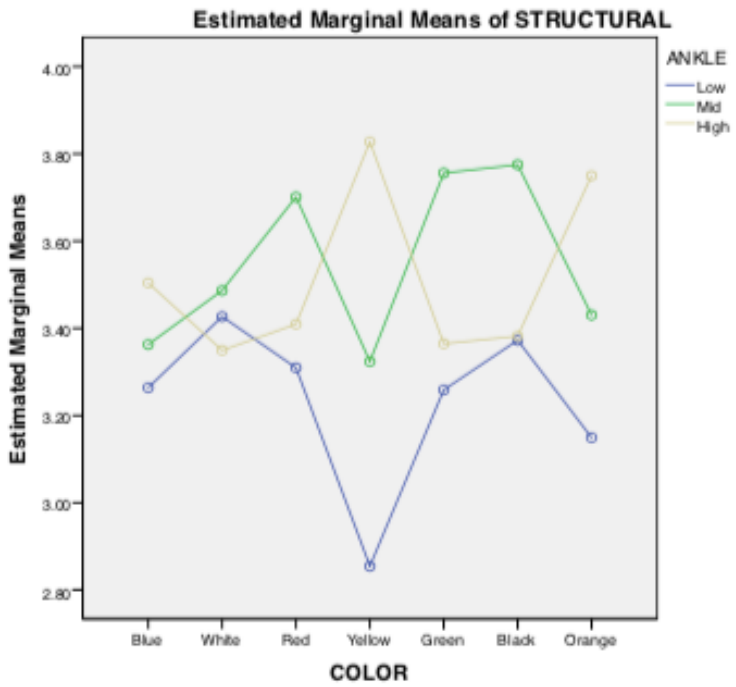

Figure 10. Interaction effect of color*ankle on Structural design feel using Bonferroni adjustment.

RQ2: Kansei design feels and PAPE. This research question examined whether basketball shoe's Kansei design feel significantly influences PAPE. The influence of consumers' perceived levels of the three Kansei design feels of basketball shoes on their PAPE was analyzed using a stepwise multiple linear regression in SPSS. The model with the three predictors explained a significant amount of the variance in PAPE: $F(3, 1277) = 33.836$, $p < .001$; $R^2 = .074$. The regression results revealed that the Boldness and Ergonomic design feels positively influenced PAPE and the Structural design feel negatively influenced it (see Table 17). Overall, as the shoes' boldness or ergonomic design feels increase and their structural design feel decreases, their associated PAPE increases.

Table 17

Regressing the design feels on PAPE, consumer delight, and wear intention

Measure	Std. β	Std. Error	*t*	*p*
PAPE				
Ergonomic	.279	.040	6.964	< .001**
Boldness	.220	.035	6.275	< .001**
Structural	-.139	.039	-3.595	< .001**
Consumer Delight				
Boldness	.352	.031	11.193	< .001**
Ergonomic	.342	.036	9.516	< .001**
Structural	-.127	.035	-3.669	< .001**
Wear Intention				
Ergonomic	.498	.042	11.884	< .001**
Boldness	.356	.037	9.727	< .001**
Structural	-.090	.040	-2.226	.026*

Note. Predictors placed in the order of strongest effects by the std. beta coefficient. * Significant at $p < .05$. ** Significant at $p < .001$.

RQ3: Kansei design feels and consumer delight. This research question examined whether basketball shoe's Kansei design feel significantly influences consumer delight. A stepwise multiple linear regression was used to understand the influence of the three design feels on consumer delight. The model with the three predictors explained a significant amount of the variance in consumer delight: $F(3,1277) = 77.163$, $p < .001$; $R^2 = .153$. The regression results revealed that, similar to PAPE, consumer delight is positively influenced by the perceived Boldness and Ergonomic design feels while being negatively influenced by the perception of the shoe's Structural design feel (see Table 17). In summary, as the shoes' boldness or ergonomic design feels increase and their structural design feel decreases, their associated consumer delight increases.

RQ4a: Kansei design feels and wear intention. This research question examined whether basketball shoe's Kansei design feel significantly influences the athlete's wear intention for the shoe. The influence of the three design feels on wear intention was analyzed using a third stepwise multiple linear regression. The results of this model (see Table 17) mirrored those of the

previous two models which indicated a positive influence of the Boldness and Ergonomic design feels and a negative influence of the Structural design feel on PAPE and delight; the current model explained a significant amount of the variance in wear intention as well: $F(3,1277) = 80.756$, $p < .001$; $R^2 = .159$. These results show that as the shoes' boldness or ergonomic design feels increase and their structural design feel decreases, athletes' wear intentions increase.

RQ4b/c: Mediation of PAPE and consumer delight. To test the mediation of PAPE and consumer delight in the relationship between perceived Kansei design feels and wear intention, a four-step mediation procedure was conducted. The first step, ensuring the influence of the perceived levels of the three design feels of Boldness, Structural, and Ergonomic on wear intention are significant, was successful (see results for RQ4a). Second, the stepwise multiple linear regression analysis to test for the influences of the proposed mediators, PAPE and consumer delight, on wear intention was statistically significant [$F(2, 1278) = 1304.857$, $p < .001$, $R^2 = .671$]. It was found that consumer delight significantly predicted wear intention (Std. $\beta = .698$, $p < .001$), as did PAPE (Std. $\beta = .317$, $p < .001$); therefore, step 2 was also successful. The third step was successful as the influence of all three Kansei design feels on PAPE (RQ2) and consumer delight (RQ3) were significant. Finally, stepwise multiple linear regression with Kansei design feels, PAPE, and consumer delight as the predictors and wear intention as the dependent variable revealed that the influence of the Structural design feel on wear intentions became non-significant when the proposed mediators were included in the model. Therefore, the negative influence of the Structural design feel on wear intention is fully mediated by PAPE and consumer delight. Sobel tests were used to determine if the beta coefficient (i.e., the effect strength) of the Structural design feel significantly decreased with inclusion of the predicted mediators; it was found that both consumer delight ($z = -3.59$, $p < .001$) and PAPE ($z = -3.81$, $p <$

.001) were significantly mediating the relationship between the Structural design feel and wear intention, with PAPE being the more influential mediator.

The influence of the Boldness and Ergonomic design feels on wear intentions did not become non-significant with the inclusion of the mediators, PAPE and consumer delight, in the model. Therefore, Sobel tests were used to determine if the beta coefficients (i.e., the effect strength) of the Boldness and Ergonomic design feels significantly decreased with inclusion of the predicted mediators. The results of the Sobel tests revealed partial mediation of PAPE and consumer delight in the relationship between the Boldness (PAPE: $z = 6.18$, $p < .001$; consumer delight: $z = 10.99$, $p < .001$) and the Ergonomic (PAPE: $z = 6.82$, $p < .001$; consumer delight: $z = 9.29$, $p < .001$) design feels and wear intentions. These findings suggest that the positive influences of the Boldness and Ergonomic design feels on wear intention are partially mediated by PAPE and consumer delight.

CHAPTER V. DISCUSSION AND IMPLICATIONS

This study aimed to explore the relationships between design characteristics of basketball shoes, their resultant Kansei design feels, and consumers' perceptions of PAPE, delight, and wear intention as a function of the shoe's design feel. This chapter discusses the results of these exploratory relationships by relating them to the literature reviewed and conceptual background on which this study is based. First, the results regarding the creation of Kansei design feels based on the design characteristics of basketball shoes are discussed, followed by a discussion of the influences of those design feels on PAPE, consumer delight, and wear intention, including the mediation of PAPE and consumer delight in the relationship between the design feels and wear intention. Last, theoretical and managerial implications, limitations of the study, and suggestions for future research are discussed.

Discussion and Conclusions

RQ1a: Kansei design feels. The results of factor analysis of Kansei word ratings for all the stimuli used in this study revealed four design feels of basketball shoes based on their Boldness, Structural, Ergonomic, and Formality perceptions. The design feels of Boldness, Structural, and Ergonomic were conceptually and statistically reliable and clearly relate to the form and function of basketball shoes. While it makes sense that design feels associated with the shoes' ergonomics or structural design would emerge as the shoes are, first and foremost, for athletic sport, the creation of a design feel that explains the largest amount of the variance and is focused on the striking and bold nature of a shoe that is created to primarily be a functional

product is strong evidence for the hedonic nature of basketball shoes. For the Boldness design feel, the word pairs of quiet:vivacious, dull:bright, and mediocre:striking had the highest factor loadings; all three of these are easily used to describe colors or combinations of colors (especially dull:bright), but the high loading of quiet:vivacious is the strongest indicator of support for Nagamachi's (1995) description of Kansei, which can be described as linking human emotions to the non-human objects which elicit them. Describing a shoe as quiet compared to vivacious or modest compared to obtrusive are generally ways to describe other humans, but these findings indicate that, in support of Nagamachi (1995), consumers are able to call non-human objects by these descriptors as well. The Structural and Ergonomic design feels also followed this finding; the word pairs of thin:thick and fragile:sturdy were integral for the creation of the Structural design feel and tight:comfortable and rigid:compliant were similarly important for the Ergonomic design feel, but these factors also included highly humanized word pairs like female:male (Structural) and dangerous:safe (Ergonomic). This supports the idea that Kansei engineering methods are applicable for understanding the emotions elicited by basketball shoe design, which expands the scope of Kansei's use.

Although the Formality design feel was not included in further analyses because of its low reliability coefficient, it warrants further discussion. As consumers increasingly wear athletic footwear as fashion items and designer brands such as Louis Vuitton and Balenciaga have begun to create luxury fashion footwear in the style of basketball shoes, the feel of formality and elegance elicited by shoe designs are becoming more important. The word pair of *expensive:cheap* partially loaded on the Formality design feel, which indicates that increased formality of shoe designs may be associated with increased price perceptions. Future research should investigate this design feel further, as well as include luxury athletic-style footwear

images within the stimuli, to determine if formality should be considered a reliable design feel for athletic footwear and if it influences perceptions of performance enablement, delight, and wear intention.

RQ1b: Linkages of design characteristics to Kansei design feels. With respect to colorway, the findings of this study serve as a supplement to those of Shieh and Yeh (2015), who found that colors were linked to Kansei words; while the researcher did not link colors to individual Kansei words, the findings show that colors can be linked to combinations of Kansei words (i.e., Kansei design feels). While Shieh and Yeh (2015) found that red and black were perceived as the most modern colors, this was not necessarily supported by the current findings. The feeling of modernity was included within the Boldness design feel and color had significant effects on it, but black was actually found to score second lowest on the Boldness design feel and red received only a moderate score. For this study, bright colors such as yellow and orange were thought to be much bolder (which includes modernity) than colors such as red and black. This difference in findings could be explained by the differences in sample and shoe type; while Shieh and Yeh (2015) used a general student sample (20 participants) from Taiwan to link individual Kansei words to general sport shoes, the current study used a sample of 170 Millennial basketball athletes living in the United States to link groups of Kansei words to basketball shoes. Although the colors and Kansei words used in both studies were the same, the design of basketball shoes is very different than that of general sport shoes and one may speculate that non-athletes and female participants may have different perceptions than male athletes. In addition, the sample used in the current study was larger than the sample used in Shieh and Yeh's (2015) study; therefore, the current results are likely less sample-specific and more generalizable across the male Millennial athlete population due to a larger sample size.

Ultimately, the current findings support those of Shieh and Yeh (2015), indicating that color can in fact change the semantic effect of products. Although color had significant effects on the Structural and Ergonomic design feels, no significant differences between the colors were found and their associated effect sizes were much lower than that of the Boldness design feel. This indicates that, while color influences these design feels, it has much stronger implications for the perception of boldness in a shoe than its perceptions of ergonomics or structure. The next aspect of colorway, the number of colors in the shoe, only had significant main effects on the Boldness design feel; significant differences were found between one and two colors and one and three colors, but not between two and three colors. These results followed those of Shieh and Yeh (2015), who found that shoes with three colors were the most preferred. Although the current study did not measure preference, one could speculate that because shoes that are highly bold result in more feelings of delight and more intentions to wear, that bold shoes are likely preferred. Therefore, our finding that shoes with multiple colors are considered the boldest supports that of Shieh and Yeh (2015). The final aspect of colorway, the midsole color, had no significant main effects on any of the design feels. Although the environmental scan of the athletic footwear industry revealed that matching or contrasting midsole colors were differentiators in shoes and the finding by Shieh and Yeh (2015) indicated that this impacted ratings on the Kansei word pairs, this was not found in the current study. Similar to the color and number of colors design characteristics, it is possible that the difference in shoe type and sample could have influenced this differences in these findings; it is possible that it is more common to see varying midsole colors in basketball shoes compared to general athletic shoes, which would lead to non-significant effects for basketball shoes but significant effects for the running shoes used by Shieh and Yeh (2015).

While it was unexpected that the strap feature had no significant effects on any of the design feels, it is even more surprising that ankle coverage had no significant effect on the Ergonomic design feel but did have significant effects on the Boldness and Structural design feels. One could speculate that straps on basketball shoes, which exist to improve the fit and comfort of the shoes, would influence perceptions of comfort and safety. The lack of a significant effect of straps on the Ergonomic design feel indicate that the primary color of the shoes is more important for perceptions of comfort and safety than design characteristics that are engineered to improve comfort and safety.

In regard to ankle coverage, there was speculation that high tops may be perceived as safer due to the common understanding in the industry that high top shoes help reduce ankle inversion. While there is conflicting evidence to support the actual safety associated with high tops (Barrett et al., 1993; Daack & Senchina, 2014; Ricard et al., 2000), the current research found that the varying levels of ankle coverage had no significant effect on perceived ergonomics. This suggests that non-safety related design characteristics may impact safety perceptions more than those created to improve safety, although more investigation into this finding is necessary to support this possibility. Ankle coverage did significantly influence the perceived Boldness and Structural design feels, although significant differences between the three levels were only found for the Structural design feel. Mid tops followed by high tops were perceived as the most structural, which ultimately means they result in the least delight, lowest perceptions of performance enablement, and weakest intentions to wear the shoes. This finding supports that of Daack and Senchina (2014), who discovered that low or mid top football cleats were perceived as the most comfortable and lightweight (i.e., low scoring on the Structural design feel). In addition, this supports Kobe Bryant's claim that low top basketball shoes are

more lightweight and can improve performance (Drehs, 2008); shoes that scored high on the Structural design feel in the current study were seen as bulky, thick, and rough, which had a negative influence on performance perceptions.

Although interaction effects between the design characteristics on the design feels were not anticipated, the three interactions between primary color and number of colors, primary color and strap feature, and primary color and ankle coverage were found. Interestingly, the interaction effect of primary color and number of colors, two characteristics of colorway that would logically have an effect on the Boldness design feel as they individually had significant effects, was only significant on the Structural design feel. While it is difficult to say how this interaction effect occurred, one may speculate that the combination of colors used in the shoe may have an impact; while the shoes were perceived as more structural when they were mostly white but had 3 colors, shoes that were primarily yellow or green (a highly and moderately bold color, respectively), were thought to be more structural when they only had one color. Based on descriptive statistics, green was the absolute most structural color and yellow was the least. This shows that, while green shoes are ultimately going to be perceived as structural regardless of the number of colors in the shoe, yellow shoes can become structural if no other colors are included. Therefore, an all yellow shoe or an all green shoe should be avoided as these will result in lower performance perceptions, lower levels of delight, and lesser wear intentions. Similar to the primary color and number of colors interaction effect, the interaction of primary color and strap feature was only significant on the Structural design feel; white shoes with straps have a more structural feel than white shoes without straps. An explanation for this could be that with a fully white shoe, the athlete's focus is on the strap feature instead of the color. Although strap feature had no significant main effects on any of the design feels, the combination of a strap with an all-

white shoe serves as a spotlight on the strap which may increase perceptions of sturdiness. Finally, the interaction of primary color and ankle coverage led to significant effects on both the Boldness and Structural design feels. Similar to white shoes with straps, it was found that white or black shoes with a high top were seen as significantly more bold than the two other ankle coverage levels, which again could be due to the focus being placed on the most noticeable design characteristic (the high top) as the colors white and black command less attention than brighter colors. In fact, orange shoes (a highly bold color) are seen as more bold when it has a mid top compared to a low or a high top, although no significant differences were found between low and mid top boldness levels. Interestingly, when shoes are fully yellow, orange, red, or green (which ranges from highly to moderately bold) athletes perceive them to be less structural when they have a low top. This could lead one to believe that when shoes have a single color which is highly bold, increased ankle coverage adds bulk or perceived weight to the shoe, which ultimately decreases perceptions of performance.

RQ2: Kansei design feels and PAPE. First, the validity and reliability of the new PAPE scale, as well as the significant findings associated with it, further support the findings from Park and John (2014) who discovered that using a specific brand name influenced athletic self-efficacy and actual performance. In addition, this study serves as a supplement to that of Hoegg and Alba (2011), who also found that athletic shoe aesthetics can influence functional performance perceptions; their findings are extended in the current study as they found that aesthetics influence perceptions of performance of the shoe, while this study found that in addition to aesthetics (boldness design feel), the performance perceptions of the shoe (ergonomic design feel) can also be transferred to the performance of the athlete, ultimately supporting the conceptualization of PAPE. Further, the findings from this study support the notion that the three

Kansei design feels, through elicited emotions based on design characteristics, can impact PAPE as the model including the three design feels as predictors explained 74% of the variance. The Boldness design feel had the strongest positive influence on PAPE, indicating that bright colors and other striking design characteristics such as more colors (2 or 3 colors compared to 1 color) combine to create basketball shoes that athletes perceive will improve their performance. The Ergonomic design feel was just below the Boldness design feel on positive influence, which shows that shoes that are perceived as comfortable, compliant, and safe are believed to positively impact performance. Strangely, when shoes score low on the Structural design feel (i.e., they are perceived as thin, feminine, and fragile), they score higher in PAPE. One could speculate that this is due to perceptions of the shoes being lightweight; professional athletes have said that lower topped shoes decrease weight and ultimately improve performance (Drehs, 2008), although this has never been formally studied. The ankle coverage design characteristic did have a significant impact on the Structural design feel and low top shoes scored the lowest; therefore, it could be possible that low tops were perceived to be more lightweight, which increased performance perceptions despite the lack of a word pair describing the weight of the shoe (the closest was thick:thin). Future research should consider including a word pair such as "heavy:lightweight" to measure Kansei words related to athletic shoes to determine if this is actually the case.

RQ3: Kansei design feels and consumer delight. All three Kansei design feels were found to significantly impact consumer delight, but the Boldness design feel had the strongest impact and accounted for 45% of the variance explained. This finding is unsurprising; the Boldness design feel describes shoes that are bright, exciting, and modern, which logically are associated with delight or the "wow factor." Shoes that scored higher on the Boldness and

Ergonomic design feels and lower on the Structural design feel scored higher in consumer delight. In other words, shoes that look more exciting, safe, comfortable, or those that are thinner elicited higher levels of delight from the athletes. These findings, in combination with the findings for PAPE, support the first postulate of Bloch's (1995) Model for Consumer Response to Product Form as significant relationships were found between the product form of shoes and cognitive (PAPE) and affective (consumer delight) responses. In addition, the findings mirror those of Wang (2011) who found that consumer delight associated with hedonic supporting services in a hospitality environment is integral for influencing repurchase intentions; design aesthetics for basketball shoes are purely hedonic, yet they significantly influence delight for all three design feels and, as discussed below, delight was found to fully or partially mediate the relationships between the design feels and wear intention, a behavioral response like repurchase intention.

RQ4a: Kansei design feels and wear intention. The three Kansei design feels all had significant effects on wear intention. Interestingly, the Ergonomic design feel accounted for 46% of the variance, while the Boldness design feel accounted for 42%; it is surprising that perceptions of safety and comfort lead to slightly greater intentions to wear the shoes than excitement and boldness, although this indicates that athletes are also concerned about the functionality of the shoes in addition to the aesthetics. The significant positive influence of the Boldness and Ergonomic design feels and the significant negative influence of the Structural design feel on wear intention show that, while these relationships are either partially or fully mediated by PAPE and consumer delight, they may be enough on their own in the context of basketball shoes to influence athletes' intentions to wear the shoes. This is certainly a useful finding for product developers; ensuring that basketball shoe designs are bold, ergonomic, and

not too structural (i.e., do not appear to be too thick or bulky) can possibly increase the chances of a positive intention to wear or purchase the shoes.

RQ4b/c: Mediation of PAPE and consumer delight. While PAPE and consumer delight were thought to mediate the relationships between the Kansei design feels and wear intention, this was not completely found to be the case. All three design feels had a significant influence on wear intention, perceived athletic performance, and delight, and the relationships of perceived athletic performance and delight on wear intention were significant, but the relationships between the Boldness and Ergonomic design feels and wear intention did not become non-significant when the mediators were included in the model, while that of the Structural design feel and wear intention did become non-significant. Sobel tests were used to determine that the influences of the Boldness and Ergonomic design feels on wear intention were partially mediated by PAPE and consumer delight as their influence on wear intention were too strong. This indicates that, while perceptions of performance and feelings of delight associated with shoes can increase the intentions to wear basketball shoes, boldness and ergonomic perceptions are possibly strong enough predictors on their own to influence behavioral intentions. Both Wang (2011) and Finn (2005) found in their respective studies that delight was necessary to impact behavioral intentions to make a purchase or revisit a website, but for athletic footwear this study's results suggest that the bold or ergonomic design of the shoes may be enough. Future research should explore the possibility that delight and PAPE may serve as moderators for the Boldness and Ergonomic design feels, as they were not full mediators of the relationships and they strongly influenced wear intention on their own. Because of this, it may be possible that delight and PAPE may serve to strengthen the already significant relationships of the Boldness and Ergonomic design feels and wear intention as moderators. In other words,

while bold and ergonomic design already have significant positive influences on wear intention, the addition of consumer delight and PAPE associated with the designs could strengthen the relationships and increase the resulting wear intentions. This possibility should be explored in future research.

Theoretical Implications

The findings from this study have multiple theoretical implications. First, this study fills an important gap in the product development literature by investigating how design characteristics elicit emotions from consumers, influencing psychological reactions and behavioral intentions. There is a huge potential for Kansei engineering methodology to be used in product development research, and this study shows that its application in this context is effective. Future researchers can adopt this methodology, which has historically been used for the development of technology and hard goods such as automotives, electrical appliances, and construction technology (Nagamachi, 1995), to explore how key design characteristics of soft goods are related to a product's feel expressed through Kansei words. These unexplored relationships can allow future researches to develop affective design feels for other product categories and understand how these feels impact consumers' affective, cognitive and behavioral responses. In addition, no previous research has attempted to understand the design feels of basketball shoes, although the factors created could be applicable to other forms of athletic footwear, such as running shoes. The current research spurs additional investigation into the possible extension of these design feels into other athletic footwear types, as well as the exploration into the design characteristics of other sporting goods that could influence perceptions of athletic performance enablement.

The usage of an all athlete sample from across the United States is also fairly uncommon in academic research, as procuring a sample of athletes with as much experience as those used in this study can be time-consuming and expensive. While using professional athletes may have been ideal, the usage of non-professional intramural athletes allowed for a much larger sample with a variety of experiences with basketball and basketball shoes. Ultimately, the sample of athletes for this study provided more influential findings as basketball shoes are much more specific to them than general consumers.

In addition, the new measure for PAPE can be used in other studies that seek to understand how products or brands, similar the study with Gatorade by Park and John (2014), influence athletic self-efficacy as this can have real impacts on actual performance. Finally, this study showed that the theoretical application of Bloch's (1995) Model for Consumer Response to Product Form can work in the context of basketball shoes; although the relationships between the Boldness and Ergonomic design feels and wear intention were not found to be fully mediated by PAPE and consumer delight, these variables did mediate the relationship between the Structural design feel and wear intention. This shows that this theoretical application may not be completely applicable to basketball shoes, although it may be applied in some contexts.

Lastly, a large amount of additional data was collected in this study that can be further analyzed. Data could be analyzed at the Kansei word level, similar to the study by Shieh and Yeh (2015), instead of at the design feel level; this would allow one to understand the relationships between individual Kansei word pairs and the five design characteristics. For example, future analysis could explore whether high top shoes or shoes with straps influence perceptions of "retro," or whether certain colors influence perceptions of safety. Questions such as these have

the potential to be answered using the data collected but have yet to be undertaken within this thesis.

Product Implications

The basketball sneaker market has faced some challenges in the last year. According to an article published by Forbes, "performance basketball was one of the few categories [of sneakers] that saw a decline in average selling price" in 2016 (Powell, 2016). In contrast, the article states that all retro sneaker styles have seen an increase in sales over the last few quarters, including retro basketball sneakers. What is it about the retro styles that differentiates them from their more modern counterparts for consumers? Could it be the 'nostalgia' that they evoke? With re-released retro sneakers, the materials used and construction techniques are the same as newer shoe designs (Jervell, 2016); therefore the only difference between the two seems to be the aesthetic style and the associated emotional response. This, along with the knowledge of the importance of visual attributes in athletic shoes from previous research (Branthwaite & Chickalingam, 2009) and the current findings, provides evidence to support the notion that understanding which design characteristics lead to the perception of heightened performance enablement and delight could assist basketball shoe developers in selecting design characteristics, separate from brand identity, that can best attract and "wow" the athlete, ultimately impacting sales and potentially benefitting athlete performance. Product developers of basketball shoes can use these findings to design shoes that they know will elicit feelings of delight and perceptions of performance enablement, which should ultimately increase the likelihood that athletes will want to wear (and will hopefully want to purchase) the shoes. For example, product developers will now know that highly bold shoes are the most effective for "wowing" the consumer and influencing their intention to wear the shoes. In addition, the strong

effects of the Boldness and Ergonomic design feels on wear intention by themselves are important for product developers to note; focusing on these two design feels by ensuring the use of bold colors, two or three colors compared to one color, and even using low tops compared to high or mid tops could be enough to strongly influence wear intentions without accounting for performance perceptions or delight at all.

Developers should stay away from designing shoes that appear bulky or even too sturdy (Structural design feel) while maximizing the shoes' brightness and complexity (Boldness design feel) or appearances of comfort and flexibility (Ergonomic design feel). Ultimately, when product developers are designing new shoe concepts, they should keep in mind that the shoes felt to be highly bold and ergonomic and less structural are the ones that are perceived to improve athletes' performance, most influence their feelings of delight, and ultimately result in increased wear intentions. More specifically, when product developers are considering the design characteristics they will include in a new shoe, they should also consider how their interactions may affect perceptions. Shoes with bold colors such as yellow, orange, or red are associated with increased delight and performance perceptions, but the addition of a high top could actually increase the shoes' feeling of structure and bulkiness enough to reverse those positive effects. Similarly, while fully white or fully black shoes with high tops are seen as highly bold with the focus shifting from the color to the striking nature of the increased ankle coverage, the addition of a strap also shifts the focus and the result is the perception of increased weight and reduced performance. Product developers must be able to find the ideal balance between these design characteristics, focusing on increasing boldness and ergonomic perceptions while reducing perceptions of increased structure and bulk; ideally, this means designing basketball shoes with two bright colors other than green, a low top, and no strap. Shoes that fall within this scope

should maximize scores on the Boldness and Ergonomic design feels and reduce scores on the Structural design feel, which should increase delight, improve performance perceptions, and result in a stronger intention to wear the shoes.

In addition, the Kansei design feels of basketball shoes could be used in the context of online mass customization. Mass Customization Toolkits (MCT), such as NIKEiD (nike.com), miadidas (adidas.com) or Under Armour ICON (underarmour.com), provide a co-designing platform for consumers where they can customize different shoe styles with a variety of colors, laces, materials, and even text or images. According to a study by Yu and Park (2014), consumers may perceive MCTs to be difficult to use, which increases their perception of product performance risk. One way to potentially improve perceived ease of use is to simplify the design process for consumers, limiting the overwhelming amount of choices to a smaller number of Kansei design feels for athletic shoes, each consisting of a subset of all available design characteristics. For example, a consumer may use a solution such as NikeID to design their own basketball shoes that feel bold and less bulky, or even design basketball shoes that appear more formal to wear with a fashionable outfit. Based on the findings of this study, NikeID could suggest several combinations of design characteristics that scored high on the related design feel, such as shoes that have two bright colors for bold shoes or shoes with a low top for less structural shoes. This would help the consumer simplify the co-design process while improving the likelihood that they will make a purchase because the shoe designed is known to elicit the emotion and perceptions they desire.

Limitations and Recommendations for Future Research

Although all precautions were taken to ensure the validity of these findings, a number of limitations still arose. First, a sample of only 170 respondents was used in this study. Many

significant results were still found, but a larger sample may have led to different or stronger results as only 10 respondents on average viewed each stimulus image. The sample size was also inflated as responses were viewed at the stimulus x respondent level, and this inflation could have also influenced the findings as the data are treated as if they are from 1,271 separate respondents instead of 170 respondents viewing 7 different stimuli. In addition, the sample was primarily Caucasian and from a high socioeconomic class, and a sample of this kind may have different perceptions related to expensive athletic footwear than athletes of other races and income levels. The majority of respondents were intramural players at the University of Oregon, which is known for its historic relationship with Nike, therefore these respondents may have strong preferences and prior knowledge related to the stimulus shoes shown, despite the brand logos being removed. Future studies should consider increasing the incentive to encourage more responses and consider taking steps to include more respondents of varying races and income levels in the sample. Although this study focused on only male basketball athletes, future studies should also consider the influence of different sport athletes as well as gender. While the researcher had specific reasons for limiting the sample to male Millennials, future research should also explore how female athletes and non-Millennials perceive basketball or other athletic shoes to determine if they differ from Millennial males.

Next, the stimuli included in this study were not necessarily representative of the entire basketball shoe market. The shoe images were chosen to include as many different combinations of the five design characteristics as possible, but it was not possible to have all combinations with all levels because the result would have been too many stimuli for reliable analysis. Future studies should attempt to include more stimuli chosen factorially based on the design

characteristics. Luxury basketball shoes made by designer brands should also be included within the stimuli to further explore the impact of the Formality design feel.

Future researchers should consider the addition of a heavy:lightweight word pair for elicited emotions by athletic footwear, as well as the possibility that PAPE may have effects on actual performance. Lastly, different product-focused theories should be investigated as applicable frameworks for athletic footwear because Bloch's (1995) Model for Consumer Response to Product Form was not a perfect fit. It may be possible that delight and PAPE actually served as moderators for the Boldness and Ergonomic design feels on wear intention, which would limit the application of Bloch's (1995) model for this phenomenon.

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Appendix A

Survey for Single Stimulus

On the following pages, you will be asked a series of questions about the appearance of **7 basketball shoes**, as well as some personal characteristics and demographics. *Please view the images carefully* and answer the questions to the best of your ability.

→

Insert Shoe Stimulus Here

How would you describe this shoe?

Mature	○ ○ ○ ○ ○	Young
Sturdy	○ ○ ○ ○ ○	Fragile
Expensive	○ ○ ○ ○ ○	Cheap

Rough	○ ○ ○ ○ ○	Delicate
Male	○ ○ ○ ○ ○	Female
Rounded	○ ○ ○ ○ ○	Sharp
Safe	○ ○ ○ ○ ○	Dangerous
Comfortable	○ ○ ○ ○ ○	Tight
Modern	○ ○ ○ ○ ○	Retro
Simple	○ ○ ○ ○ ○	Complex
Traditional	○ ○ ○ ○ ○	Technological
Striking	○ ○ ○ ○ ○	Mediocre
Vivacious	○ ○ ○ ○ ○	Quiet
Formal	○ ○ ○ ○ ○	Casual
Compliant	○ ○ ○ ○ ○	Rigid
Bright	○ ○ ○ ○ ○	Dull
Elegant	○ ○ ○ ○ ○	Unrefined
Thick	○ ○ ○ ○ ○	Thin
Obtrusive	○ ○ ○ ○ ○	Modest

What do you think about this shoe?

Bad	○ ○ ○ ○ ○	Good
Very poor performance	○ ○ ○ ○ ○	Excellent performance
Not fashionable	○ ○ ○ ○ ○	Fashionable
Not likeable	○ ○ ○ ○ ○	Likeable

Insert Same Shoe Stimulus Here

Please view the image again and respond to each of the following items by selecting your level of agreement on a 5-point scale, between "strongly disagree" and "strongly agree."

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I believe that wearing this shoe will improve my performance in a basketball jumping activity.	O	O	O	O	O
I believe that wearing this shoe will improve my performance in a basketball shooting activity.	O	O	O	O	O
I would like to try this shoe while I play basketball.	O	O	O	O	O
This is a stimulating shoe.	O	O	O	O	O

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I would actively seek out this shoe in order to wear it while playing basketball.	O	O	O	O	O
I believe that wearing this shoe will improve my basketball performance.	O	O	O	O	O
This shoe brings me joy.	O	O	O	O	O
This shoe transmitted positive feelings to me.	O	O	O	O	O

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
This shoe brought me pleasure.	O	O	O	O	O
This shoe brought me happiness.	O	O	O	O	O
I believe that wearing this shoe will improve my performance in a basketball sprinting activity.	O	O	O	O	O
I would wear this shoe if it was given to me to play basketball in.	O	O	O	O	O

→

Please respond to each of the following items by selecting your level of agreement on a 5-point scale, between "strongly disagree" and "strongly agree."

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I see things in a product's design that other people tend to pass over.	○	○	○	○	○
A product's design is a source of pleasure for me.	○	○	○	○	○
I enjoy seeing displays of products that have superior designs.	○	○	○	○	○
I often wear basketball shoes off of the court as fashion items.	○	○	○	○	○
Sometimes the way a product looks seems to reach out and grab me.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
If a product's design really "speaks" to me, I feel that I must buy it.	○	○	○	○	○
Being able to see subtle differences in product designs is one skill that I have developed over time.	○	○	○	○	○
Celebrity athlete endorsements influence my preferences for basketball shoes.	○	○	○	○	○
I have a pretty good idea of what makes one product look better than its competitors.	○	○	○	○	○
I have the ability to imagine how a product will fit in with designs of other things I already own.	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
When I see a product that has a really great design, I feel a strong urge to buy it.	○	○	○	○	○
Owning products that have superior designs makes me feel good about myself.	○	○	○	○	○
Beautiful product designs make our world a better place to live.	○	○	○	○	○

Please rate how much you like each of the following brands on a 5-point scale from "dislike very much" to "like very much."

	Dislike very much	Dislike	Neither like nor dislike	Like	Like very much
Under Armour	○	○	○	○	○
Adidas	○	○	○	○	○
Nike	○	○	○	○	○
Jordan	○	○	○	○	○

← →

In which university are you enrolled?

- ◯ University of Maryland
- ◯ Duke University
- ◯ University of Oregon
- ◯ University of Tennessee
- ◯ University of Massachusetts

What is your gender?

- ◯ Male
- ◯ Female

What is your age (in number of years)?

What is your class standing (based on course credit)?

- ◯ Freshman
- ◯ Sophomore
- ◯ Junior
- ◯ Senior
- ◯ Graduate Student
- ◯ Other (please specify):

Please select the ethnic group with which you identify the most:

- ◯ American Indian/Alaskan Native
- ◯ Asian/Pacific Islander
- ◯ Hispanic or Latino
- ◯ Non-Hispanic Black (African American)
- ◯ Non-Hispanic White (Caucasian American)
- ◯ Other (please specify):

What is your family's total annual household income?

- ◯ $25,000 or less
- ◯ $25,001 - $50,000
- ◯ $50,001 - $75,000
- ◯ $75,001 - $100,000
- ◯ $100,001 - $125,000
- ◯ $125,001 - $150,000
- ◯ More than $150,000
- ◯ Other (please specify): _____

How often do you play basketball on average?

- ◯ More than once a day
- ◯ Once a day
- ◯ A few times a week
- ◯ Once a week
- ◯ A few times a month
- ◯ Once a month
- ◯ Less than once a month
- ◯ I do not play basketball

How long have you been playing basketball, whether for recreation or competition?

- ◯ Less than one year
- ◯ One to three years
- ◯ Four to six years
- ◯ Seven to nine years
- ◯ Ten years or more
- ◯ I do not play basketball

How often do you purchase basketball shoes on average?

- ◯ Every 1 - 4 months
- ◯ Every 5 - 8 months
- ◯ Every 9 - 12 months
- ◯ Less than once a year
- ◯ I do not purchase basketball shoes

How much, on average, are you willing to spend on a pair of basketball shoes (in number of dollars)?

0 25 50 75 100 125 150 175 200 225 250 275 300 325 350

$

←

→

APPENDIX B

Institutional Review Board Approved Information Letter

[ON AUBURN UNIVERSITY LETTERHEAD TEMPLATE FROM QUALTRICS]

INFORMATION LETTER
for a Research Study entitled
Basketball Shoe Aesthetics and Athlete Perceptions

You are invited to participate in a research to examine athletes' perceptions about the product aesthetics of basketball shoes. The study is being conducted by Alexandra Green, Graduate Student, under the direction of Dr. Veena Chattaraman, Human Sciences Professor, in the Auburn University Department of Consumer and Design Sciences. You are invited to participate because you are a male intramural basketball player and are age 18 or older.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to view images of basketball shoes and answer a series of questions about their appearances. Your total time commitment will be approximately 20 minutes.

Are there any risks or discomforts? We assure that the participation in this study would put you in no physical or psychological risks other than the minimal inconvenience of completing the questionnaire.

Are there any benefits to yourself or others? If you participate in this study, there is a possibility that the information you provide could be used by industry professionals to design better basketball shoes. We/I cannot promise you that you will receive any or all of the benefits described.

Will you receive compensation for participating? To thank you for your time you will be given the opportunity to enter into a drawing to win one of 50 $20 gift cards. Your chance of winning a gift card is one in 10.

Are there any costs? If you decide to participate, it will be of no cost to you other than your time.

Add this approval information in sentence form to your electronic information letter!

The Auburn University Institutional Review Board has approved this Document for use from 01/17/2018 to --- Protocol # 18-012 EX 1801

If you change your mind about participating, you can withdraw at any time by closing your browser window. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you've submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Consumer and Design Sciences or the researchers.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by not collecting IP addresses from research participants. Information collected through your participation may be published in a professional journal, and/or presented at a professional meeting.

If you have questions about this study, please contact Alexandra Green at aag0042@auburn.edu or Dr. Veena Chattaraman at vchattaraman@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

Alexandra Green 1/6/2018
Investigator Date

Dr. Veena Chattaraman 1/6/2018
Co-Investigator Date

The Auburn University Institutional Review Board has approved this document for use from _____ to _____. Protocol #_____

LINK TO SURVEY

Add this approval information in sentence form to your electronic information letter!

3

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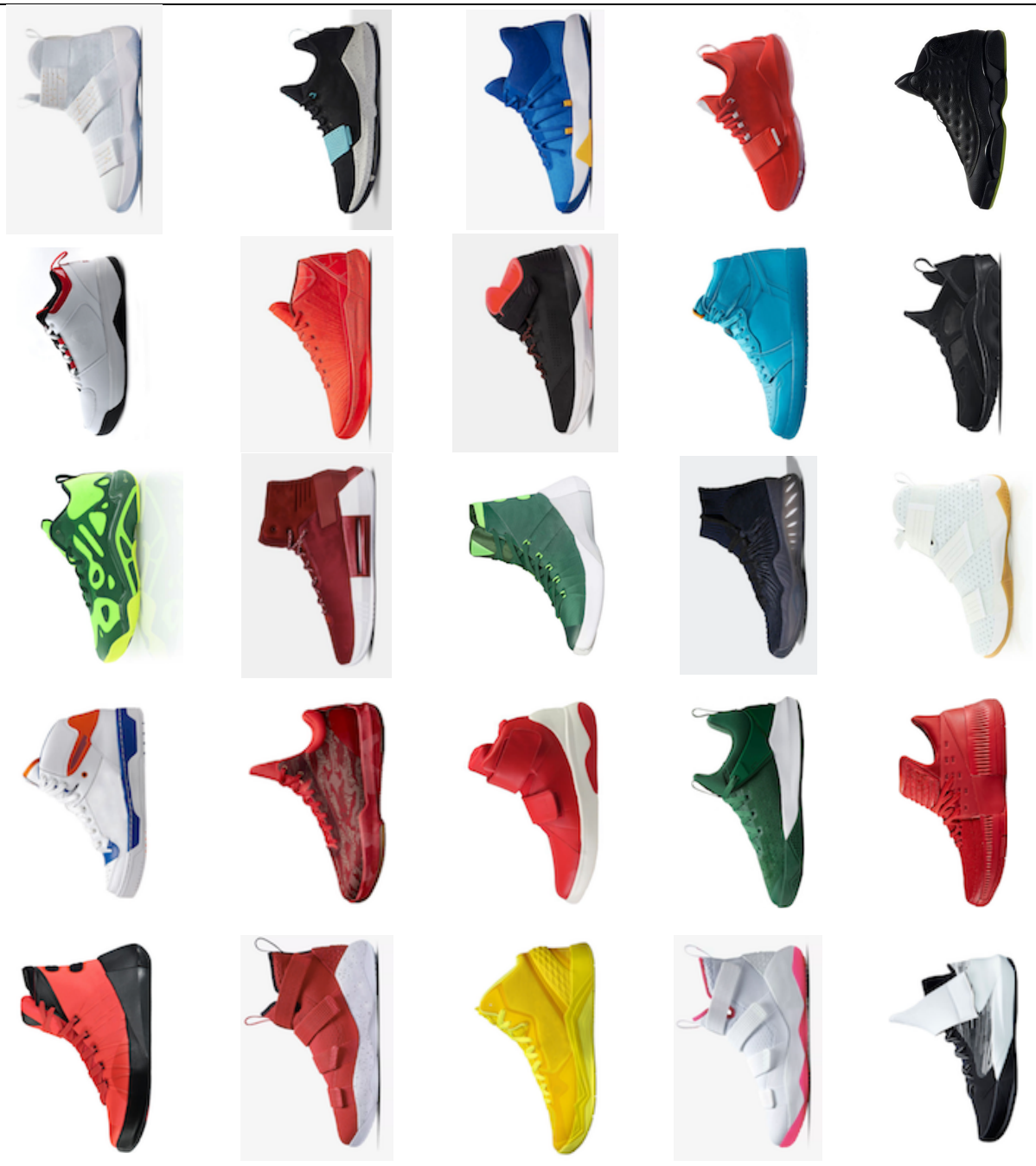
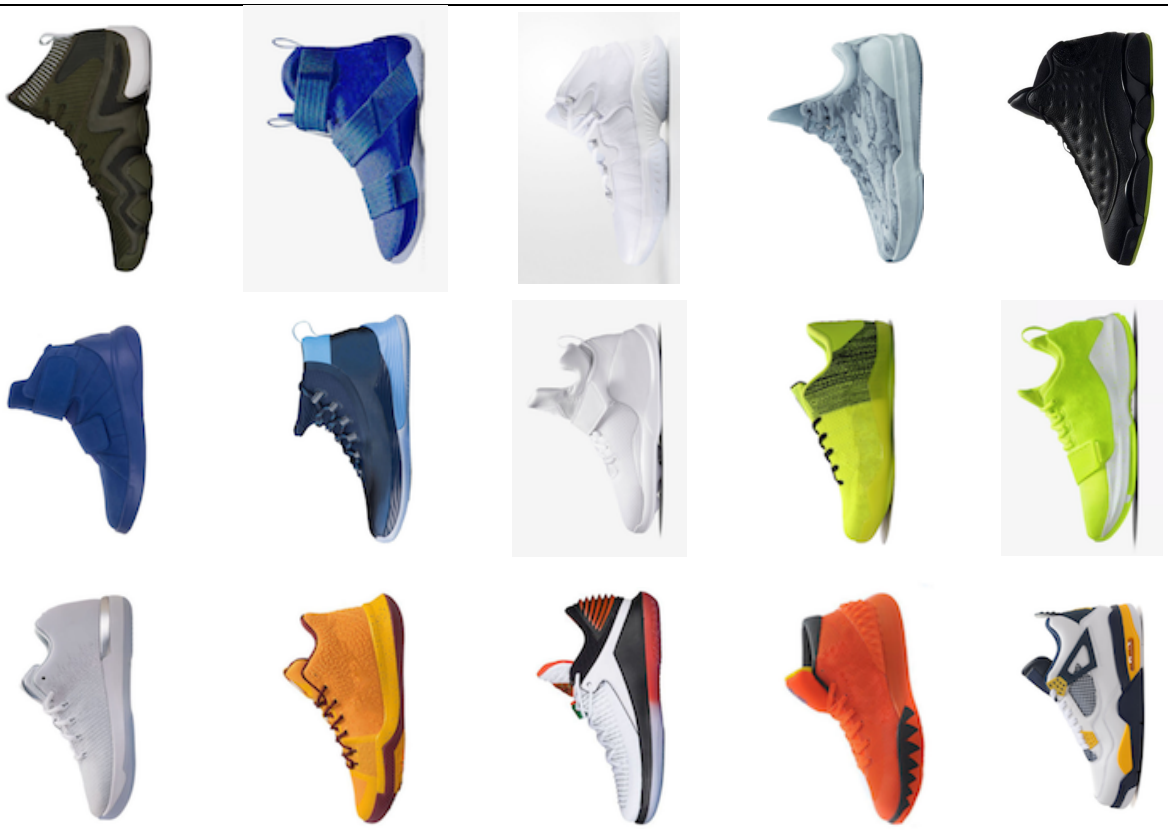
Appendix C

Basketball Shoe Images Included in Main Study





Note. All original images retrieved from nike.com, footlocker.com, underarmour.com, adidas.com, champssports.com, and finishline.com. Logos were removed for inclusion in the study.

Appendix D

Full MANOVA Results for RQ1

Variable(s)	Wilks' λ	*F*	*df*	Error *df*	Partial η^2	Sig.
Color	.881	6.531	24	4226	.031	<.001**
Number of colors	.980	2.996	8	2422	.010	.002*
Midsole color	.996	1.319	4	1211	.004	.261
Strap feature	.999	.440	4	1211	.001	.780
Ankle coverage	.959	6.452	8	2422	.021	<.001**
Color*number of colors	.982	1.806	12	3204	.006	.042*
Color*midsole color	.992	1.202	8	2422	.004	.294
Color*strap feature	.958	2.162	24	4226	.011	.001*
Color*ankle coverage	.909	2.663	44	4635	.024	<.001**
Number of colors*midsole color	1.000		0	1213		
Number of colors*strap feature	.995	1.373	4	1211	.005	.241
Number of colors*ankle coverage	.993	1.011	8	2422	.003	.425
Midsole color*strap feature	.997	.928	4	1211	.003	.447
Midsole color*ankle coverage	1.000		0	1213		
Strap feature*ankle coverage	.996	.578	8	2422	.002	.797
Color*number of colors*midsole color	1.000		0	1213		
Color*number of colors*strap feature	1.000		0	1213		
Color*number of colors*ankle coverage	.993	1.989	4	1211	.007	.094
Color*midsole color*strap feature	1.000		0	1213		
Color*midsole color*ankle coverage	1.000		0	1213		
Color*strap feature*ankle coverage	1.000		0	1213		

Number of colors*midsole color*strap feature	1.000	0	1213
Number of colors*midsole color*ankle coverage	1.000	0	1213
Number of colors*strap feature*ankle coverage	1.000	0	1213
Midsole color*strap feature*ankle coverage	1.000	0	1213
Color*number of colors*midsole color*strap feature	1.000	0	1213
Color*number of colors*midsole color*ankle coverage	1.000	0	1213
Color*number of colors*strap feature*ankle coverage	1.000	0	1213
Color*midsole color*strap feature*ankle coverage	1.000	0	1213
Number of colors*midsole color*strap feature*ankle coverage	1.000	0	1213
Color*number of colors*midsole color*strap feature*ankle coverage	1.000	0	1213

Note. * Significant at $p < .05$. ** Significant at $p < .001$.