



Capturing “cool”: Measures for assessing coolness of technological products[☆]



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ABSTRACT

These days, when we float an idea for an interface or demo a prototype, the compliment that we crave for is “This is Cool!” Coolness has become a major design goal for HCI professionals. If we are serious about building Cool into our products, we should also be serious about measuring it. With this in mind, we performed a scientific explication of the concept in order to capture the psychological essence of “coolness,” covering a number of characteristics such as trendiness, uniqueness, rebelliousness, genuineness and utility. Based on the discourse in the literature, we arrived at a series of questionnaire measures, which we subjected to an exploratory factor analysis in Study 1 ($N=315$). The factor structure that emerged was tested through a confirmatory factor analysis in Study 2 ($N=835$), in which American and Korean respondents rated their perceptions of a variety of old and new technologies. Converging evidence suggests that in order for an interface to be rated as cool, it should not only be attractive and original, but also help the user assert his/her uniqueness or subcultural identity. Study 3 ($N=317$) tested the content validity of our factors by comparing them with a holistic evaluation of coolness and arrived at a parsimonious three-factor solution for conceptualizing it in terms of originality, attractiveness and subcultural appeal. Together, these constitute tangible user criteria that designers can strategically address and researchers can systematically measure.

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1. Introduction

“Cool!” has become a common expression of approval and appreciation. We use the word to describe almost all entities, be they objects, people or phenomena. In recent years, the term is frequently used to signal user approbation of digital products, especially those that are developed by Apple, Inc., and associated with their success in the marketplace. As a result, “coolness” has become an important psychological criterion, much sought after by designers, developers and marketers of new applications, interfaces and devices.

While researchers in marketing have been trying to understand the concept of “coolness” for some time now (e.g., Nancarrow et al., 2002; O'Donnell and Wardlow, 2000), its emergence in the HCI community is relatively recent. HCI designer Holtzblatt (2010) organized and led a SIG (special interest group) meeting dedicated

to “understanding cool” in CHI 2010. Based on attendees' personal experiences with—rather than professional opinions about—things that are cool, she concluded that coolness can be narrowed down to three domains—Sensation and Aesthetics (immersive, empowering, and delightful/surprising), Fit to the Life tasks (saves time and effort, adapts and enhances your life), and Device itself (invisible, engaging, effortless, reinvents the familiar, and fits the hand)—each carrying implications for interaction design (Holtzblatt, 2010). In CHI 2011, she offered a course entitled “What Makes Things Cool? Principles for Design,” in which she concluded that “cool experience of game-changing technology (like the iPhone) goes well beyond aesthetic uniqueness or even bits of fun and surprise...[it] has a profound impact on...the way we live our life.” (Holtzblatt, 2011a). This calls for reconceptualizing design in terms of the product's place in the user's life, especially his/her daily routines. Holtzblatt (2011b) opines that a cool product is one that provides “joy in life” by making users feel like that they accomplished something by using it, improved their connection with others, shaped their identity and underwent delightful sensations. In addition, the product itself should be a joy to use by being immediately deployable without too much of a learning curve and provide instant interaction gratification without too many demands on user input. Finally, she claims that cool

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products are transformative, creating a “can't go back” experience, in that the “users can't imagine going back to what they had before” (p. 47).

While coolness is often attributed to products, designers have also attempted to conceptualize it at the level of an environmental context within which certain products appear cool. For example, HCI 2011, the 25th British Computer Society (BCS) conference on Human–Computer Interaction, held a workshop on designing products for appropriation into a “cool lifestyle,” which consists of “being cool, doing cool, and having cool stuff.” Some products are inherently cool whereas others are cool in a certain context or when adopted by a cool person. A team of UK researchers applied these principles of cool to examine how teenagers designed their environments, and found age-based and gender differences in their emphasis on innovation and rebellion (Read et al., 2011). A cool product could be one that has both aspirational and anti-social connotations, but for different classes of users.

Coolness as a concept is used differently depending on the situation at hand and the uses to which users put it. It can mean different things to different people (Kerner et al., 2007). A scientific understanding of the various strands of meanings associated with this concept is necessary before we can objectively characterize its manifestation, both for design purposes and for user testing. The current investigation is an effort in this direction. The objective is to arrive at tangible perceptual requirements for coolness, i.e., what ingredients are necessary for a user to perceive coolness in an interface? These requirements can then be used as specifications by designers and as self-report measures by user experience (UX) researchers.

With this in mind, we performed a “concept explication” (Chaffee, 1991) of coolness, followed by a series of surveys in the United States and South Korea, eliciting users' perceptual responses to everyday technologies. These responses were then factor-analyzed to arrive at essential components of coolness, providing implications for design, communication and marketing of interfaces. We report these activities, in order, below.

2. Literature review – explicating “cool”

“Cool” is generally conceptualized as a positive, desirable attribute. The word has been used to describe a number of opinion objects. While some researchers approach it as a personality trait possessed by individuals (Dar-Nimrod et al., 2012), others see it as a cultural phenomenon (Frank, 1997; Zimmer, 2010). Some others see “cool” as a stage in life (Danesi, 1994), an attitude (Pountain and Robins, 2000), and even as a cognitive heuristic (or mental shortcut) used for making snap decisions (Sundar, 2008).

The flexibility of cool within American English means that the word or expression “cool” can be used for just about any purpose and to describe just about anything in regular conversation (Moore, 2004). It can be used as an adjective, an endearment, and a proxy for a host of other words or phrases in everyday conversation (Kerner et al., 2007). Cool has become so overused that some analysis suggests that it is now watered down, no longer conveying the same strength of approval or style that it once did in the past (Bauer and Bauer, 2002).

The overarching concept to which the word “cool” once referred is no longer what the colloquial usage of the word “cool” now refers. The word cool in everyday usage may not adequately connote the same strength of meaning as it once has, but for the purposes of this explication we are ignoring the watered down version of cool present in the American-English vernacular as it has become a ubiquitous “counterword of choice” (Petrucci and Head, 2006, p. 332). Rather, the “cool”

for designers and academics is mostly concerned with the strongest expressions and perceptions of the idea. It may be more helpful to think of cool as a perceived state of being, one where the term used to describe this state is inconsequential. Whether the state of being is described as cool, hot, off the chain, or sweet (Petrucci and Head, 2006), the idea behind the phrase is the same in this explication: a positive and desirable quality used to describe innovations, be they ideas, technologies or products.

2.1. Defining cool

Most writers tend to define cool by showing how it is used in language (Moore, 2004; Petrucci and Head, 2006; Zimmer, 2010), pointing out products or people that are cool (Kerner et al., 2007), its effects (Kerner et al., 2007; Sundar, 2008) and conceptual makeup (Levy, 2006) without actually defining or quantifying coolness itself (e.g., Norman, 2004). Random House's dictionary.com defines cool as a slang term to mean “great; fine; excellent,” something that is “characterized by great facility; highly skilled or clever,” or “socially adept” (Cool (<http://dictionary.reference.com/browse/cool>)). From this simple definition, we know that something that is cool is perceived as high quality and may accomplish a user's goals in a more creative manner.

These implicit conceptions imply that coolness is a perception that has an evaluative component. In fact, psychologists focus on individual perceptions of coolness when they ask study participants to rate their friends (Dar-Nimrod et al., 2012) and online interfaces (Oh et al., 2013). However, the general academic discourse on coolness, especially in marketing, suggests that these individual perceptions are reflective of culturally agreed-upon norms of coolness (Frank, 1997), implying that cool is socially constructed. This appears to be true especially at the high end of coolness. Recently, Fitton et al. (2012) found greater agreement among study participants on perceived coolness of entities that were clearly on the higher end and greater disagreement on the perceived coolness of less cool objects and brands. In other words, what one person thinks is cool is at least in part based on what other people think is cool (Gerber and Geiman, 2012). However, this correlation may not always be positive, especially if the former belongs to a subculture and perceives the latter as being part of mainstream culture (Goodman, 2001). Individuals tend to perceive others of their own social group as being more cool than those of other groups and that some groups are generally more cool than others (Rodkin et al., 2006). Thus, if an individual identifies himself or herself as belonging to mainstream culture, then that person may perceive digital devices within the mainstream realm as more cool than if the individual identified with a subculture.

Perceptions of self and others are not necessarily stable, and as social contexts vary, so do conceptions of coolness. This is illustrated by the failed attempts of marketers to make their products fit into the current social perceptions of cool (see Bulik, 2007; Creamer and Cuneo, 2008; Friedman and Cuneo, 1999; Garfield, 1999; Grossman, 2007; Madden, 2007; Pollack, 1997; Smith and Wylie, 2004; Wheaton et al., 2007). Within everyday use, cool is an evolving idea that changes from day to day (Grossman, 2007; Petrucci and Head, 2006). From this, we can conclude that the perception of cool is temporally unstable due to its socially constructed nature. Otherwise, uncool products could never become cool and cool products could never become uncool. Despite the changing perceptions of what is or is not cool at any given time, it is important to remember that cool itself does not change. A device that we consider cool today may not be as cool tomorrow, but this does not change the conceptualization of cool. Coolness as a concept is stable, but the perception of coolness in a given object is not.

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