Review

Why consumers have everything but happiness: An evolutionary mismatch perspective

Yuqian Chang and Kristina M. Durante

Abstract
The modern marketplace has made consumers' lives better in many ways, offering a multitude of affordable conveniences and luxuries. Why, then, is the prevalence of physical and mental health deficits higher than any other time in history? Here, we articulate an evolutionary mismatch perspective— the idea that the environment we live in has changed dramatically in a short period of time, but the human body and mind have not changed. Consumers' evolved body and mind are interacting with the modern world as if it was an ancestral environment that existed thousands of years ago, leading to many negative outcomes. We discuss three evolutionary mismatches that contribute to or compound consumer vulnerability to disease and dissatisfaction with life. We review emerging research and propose future directions that inform effective strategies to mitigate illness and enhance wellbeing.

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Introduction
The digital marketplace has made consumers' lives better in many ways. Consumers connect to anyone, anywhere in the world in less than a few seconds, order food delivered to doorsteps in minutes, telework from home, and shop online without ever going outside. Music and television streaming, mobile payment services, and social networking are at the fingertips of most consumers in Western societies. In many ways, consumers are living better than ever before in marketplace history.

Despite these benefits, consumers are less satisfied with life. Americans are the unhappiest they have ever been [1]. Depression, anxiety, and mental health distress have increased substantially since 2005, when the digital marketplace began to grow [2]. The increasing deficits in mental health are particularly evident in young adults. Depression has increased over 50% in adolescents and 63% in people 18–25 years of age since the move to digital [3]. Mood disorder, suicidal ideation, and death by suicide have also increased dramatically since 2005 [4]. Today, suicide is a leading cause of death for people aged 10–35, second only to unintentional injury [5]. The surge in crises of mental health represents a paradox of contemporary consumerism: Given the many conveniences and luxuries accessible to most of the population of our modern world, why are consumers more unhappy than they have ever been? We speculate that the ultimate reason resides within the growing chasm between the environment the human mind and body are designed for and the digital world.

Some proximal outcomes exacerbated by the growing mismatch are documented in literature showing that an abundance of options (i.e., choice overload) can lead to negative outcomes such as decision paralysis, regret, and decreased satisfaction [6,7]. Omnichannel retailing has proliferated the number of product options consumers can seamlessly peruse and, thus, may exacerbate the negative impact of choice on consumer happiness. Consumer materialism has also increased over the past 20 years, particularly in young adults [8]. This may reflect social media's impact on the signal value of consumer products. No longer limited to one's immediate neighborhood, signals can now reach vast numbers of people around the world. Given that materialism is linked to low self-esteem and life satisfaction [9], the recent increase in materialistic values could account for deficits in well-being for modern consumers. Although it is important to understand proximal-level variables that erode consumer wellbeing, an understanding of the ultimate-level source responsible for why consumers are facing rising mental health deficits exposes a multitude of new findings, connections, and blueprints for effective interventions.

Evolutionary mismatch
The precepts of evolutionary mismatch theory are rooted in adaptation by natural selection—the process that

shapes behavior and physiology to optimally survive and thrive in an environment. The human mind and body are adapted to survive and thrive in an ancestral environment that existed for 99% of human history. Because the ancestral environment of human brain evolution is very different from our modern environment, an *evolutionary mismatch* has emerged [10]. People today interact with the Digital Age world using their Stone Age brains designed to confront problems specific to an ancient environment.

This ancient environment was characterized by small group subsistence living, where we were in contact with only about 50−100 people for our entire lives [11]. We lived as hunter−gathers who foraged for food every day to stay alive, often experiencing long periods of fasting [12]. We moved around a lot, often lifting weighted objects. We lived outdoors, having only primitive means for shelter and natural resources for food. Disease, famine, predation, and violent warfare were common threats with little-to-no safeguards. We depended upon those in our small social group for food, shelter, childcare, and protection.

The human brain evolved to solve problems during this period of human existence 300,000 years ago—long before the dawn of agriculture 10,000 years ago, and the industrial revolution a mere 250 years ago, that finally allowed for the mass civilization to (ever slowly) emerge [13]. The process of evolution has not had enough time to change our brains to fit our new world—much less the digital world.

Consumer challenges created by evolutionary mismatch and proposed solutions

Many consumer behaviors are by-products of adaptations that were once beneficial to survival but have since gone awry in our modern world. We discuss three such mismatches below and emerging research relevant to mitigating negative outcomes.

Food

The long-lasting scarcity of nutrients and calories across evolutionary history has led human beings to evolve an innate desire and taste for food essential for survival, namely sugar and fat. While such desire was adaptive for our ancestors to encourage food foraging in past environments, the modern world is populated with caloric abundance. The result is an adaptive proclivity toward high caloric food that is maladapted to current environments. Many of the diseases that exist today result from this mismatch, such as heart disease, obesity, and diabetes [14−16]. Poor diet is also related to an increased likelihood of mental illness [17].

Consumer stress, higher today than ever before, makes it more difficult to adhere to a healthy diet [18]. For example, crowding and high population density induce affective thinking, leading to higher caloric intake [19]. Messy living and work spaces inhibit consumers' ability to make healthy food choices [20,21]. Adult consumers who grew up in poor socioeconomic conditions and children in unpredictable, low-income environments eat more even in the absence of hunger [22,23].

Solutions to remedy unhealthy eating are often challenging to execute because adaptations are deeply hard-wired into the cognitive architecture of the human mind. Consumers are wired to eat when food is available. Nevertheless, workarounds are possible. Emerging research suggests that social factors, particularly in the digital age, can motivate healthy food choice [24]. Consumers often follow the eating patterns of their romantic partners [25]. Consumers make healthier food choices when motivated to signal status because acts of self-control are associated with high status [26]. Subsequently, reflecting on one's sense of power or control also increases healthy food choices [27]. Rituals such as prayer and mindfulness exercises enacted before food intake facilitate subjective feelings of self-discipline and reduce calorie consumption [29].

Food packaging claims can also encourage healthy food choices [30]. Graphic (versus text) warning labels are more effective in reducing sugary-drink consumption [31]. Highlighting the tastiness of healthy food encourages healthy food choice and satisfaction [32,33].

Living space

Human beings evolved to live outdoors, with fresh air, natural light, plant life, and variation in temperature. Today, consumers spend more than 90% of their time inside [34]. Living indoors, with exposures to synthetic chemicals and limitations on natural light and vegetation, has made consumers more prone to obesity, infection, allergies, and mental illness [34,35]. This mismatch between the environment the body is designed to live in and modern housing environments, not only makes consumers sick, but it also negatively affects wellbeing and consumer choices [10]. For example, when ambient lighting is dim (vs. bright), consumers' mental alertness is decreased and they are more likely to choose unhealthy food [36].

Innovations in modern housing are working to address these issues of mismatch, particularly those related to overcrowding and air quality [37]. Immediate solutions to encourage better consumer choices involve rematching features within consumer environments to ancestral environments. Natural environments have many cognitive and affective benefits for human beings. For example, office plants help employees recover from visual and mental fatigue [38,39]. Foliage plants at working spaces also enhance workplace satisfaction,

concentration, and productivity [40]. It is also found that plants increase people's creativity [41]. Indoor plants can bring a positive mood [42], as well as feelings of peace and relaxation [43]. Individuals exposed to natural landscapes are more autonomous and generous [44], and put more value on the future versus instant reward [45].

Adding plant images to logos, stores, and business districts enhances consumer attraction and preferences, and perceived service quality [46,47]. Emerging research suggests that staging online real estate with more images containing plants can increase consumers' valuations of the property [48]. Featuring plants in marketing appeals also leads to better persuasion outcomes because plant images increase consumers' perceptions of warmth and trust [49].

Social world

The human mind is designed for social living. Because the quality of our social relationships was critical to survival across human history, most of the emotions we experience are social emotions designed to help us cultivate personal relationships. The social world our brains are designed to respond to is a small one, comprised mostly of extended family [50].

One factor contributing to the recent rise in social anxiety, and crises of mental health more generally, is the disparity between the mass number of individuals in our social world today versus the social world our brain is designed to thrive in. Ancestrally, having trusted family and friends was vital to survival because war, disease, predators, and famine were around every corner. Alliances with others in our group helped us overcome these challenges. Thus, the brain is designed to make us feel unhappy about disappointing people because we used to need these people to secure food, shelter, protection, and mates. Humans are cooperative people pleasers by design. This is especially true for women. Pregnancy, nursing, and childrearing—a biological "given" ancestrally—meant women required even more assistance to keep themselves alive so that children survived [51].

Today, our brains lead us to behave as if the quality of our friendships with other people means the difference between life and death because, for many millennia, it did. Only today, it is impossible to cultivate and tend relationships with all the people we encounter. Social media, television, offices, schools, restaurants, and grocery stores are just some of the venues we see other people every day. At some level, our brain continues to classify all these people as close others we must impress [52−55]. The result is an increased prevalence of social anxiety because our brains are calibrated to the costs associated with social rejection in ancestral environments [56].

Exposure to the multitude of opportunities for perceived social rejection, especially within the digital marketplace, has negatively impacted consumer wellbeing. Research finds that perceptions of others in our social world guide most consumer choices (e.g., food, clothing, music, health care, medicines, exercise, vacations) [57,58]. Social hormones increase consumer attraction to products, particularly those that increase one's social standing (e.g., conspicuous luxury goods) [59−61]. The impact of others on consumption is magnified when consumers feel socially rejected or lower in social status compared to others [62]. For example, social rejection leads consumers to spend more money on expensive luxury goods, products that symbolize group membership, and items perceived to be favored by others [63,64]. Increased consumption to compensate for social threats is found to be bidirectional, whereby increased materialism under social threat increases loneliness in consumers, as well as personal debt [65], both of which contribute to mental illness.

Emerging research offers hints at potential workarounds to the negative impact of social relationships on spending. When consumers focus on the intrinsic pleasure their purchases provide, instead of the external value of their possessions, increased loneliness is attenuated [66]. Focusing on the reality that very few others observe our choices also increases consumers' willingness to engage in consumption that benefits the self [67]. The absence of choice and the presence of serendipity improves consumer outcomes. More than just a surprise, serendipity is created through encounters or experiences

Figure 1
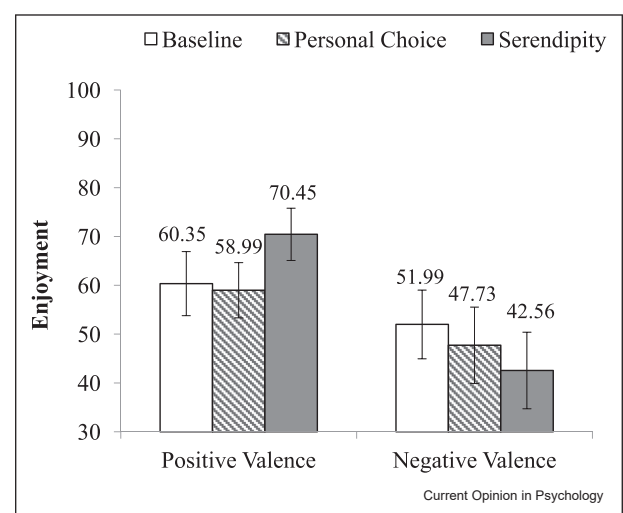
The effect of serendipity on consumer enjoyment as a function of product valence (through works of art; [28], Study 2). Removing choice enhances consumer enjoyment for positive, but not negative, consumer experiences.

that are positive, unexpected, and attributed to chance [28]. Removing attribution and deliberation over options leads to greater product enjoyment through the feeling of serendipity (unless the experience has a negative valence; that is, disgust [28]. See Figure 1. Serendipity does not allow for contemplation of the social value of a purchase and, in turn, boosts consumer wellbeing.

Conclusion
The human mind is designed for an ancestral environment that no longer exists, making modern consumers sad and sick. Evolutionary mismatch theory offers a framework to generate predictions about workarounds that can enhance consumer wellbeing. This includes creating contexts today that re-match aspects of ancestral living and reframe the costs and benefits of consumer choices that are suboptimal in the modern marketplace [28,68].

Author contribution
Kristina Durante: Conceptualization, Writing-Original draft **Yuqian Chang**: Conceptualization, Writing-Reviewing and Editing, Investigation.

Conflict of interest statement
Nothing declared.

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  ** of outstanding interest

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