The Implicit Link of Luxury and Self-Interest: The Influence of Luxury Objects on Social Motivation and Cooperative Behaviour

by

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ABSTRACT

Despite growing concerns for environmental crisis and the recent economic downturns, worldwide appetite for luxury goods has remained stable and has even grown dramatically in some countries. Luxury goods implicitly convey certain meanings and norms. What are psychological and behavioural consequences of exposure to luxuries? In this proposal, I argue that exposure to luxury goods increases cognitive accessibility of constructs relate to self-interest and subsequently affects social judgments and behaviour. I aim to establish a theoretical conjunction between (a) anthropology's study of material culture, which focuses on material evidence in attributing human cultures, and (b) psychology's priming technique, which examines the effects of activated cognitive representations on psychological responding. Accordingly, three studies were conducted to investigate the implicit link of luxury and self-interest. The results showed that exposure to luxury primes automatically activated mental associations relate to self-interest and subsequently increased one's propensity to allocate more resources to oneself relative to another person (study 1), caused some harvesters to defect in a multi-stage *N*-person commons dilemma (study 2), but did not necessarily induce unethical behaviour aimed to harm others (study 3). Research about the psychological effects of luxury goods are important because

luxuries are implicitly embedded in institutional settings and organizational environments in which negotiations are typically conducted and resource allocation decisions are made.

Table of Contents

List of Tables

List of Figures

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CHAPTER 1

Literature Review

1.1 Introduction

Mahatma Gandhi had envisaged worldwide ecological crisis we face today by stating that "the Earth has enough for everyone's need, but not for anyone's greed" (Pyarelal, 1958, p. 552). In his perspective, the present environmental problems stem from the seemingly relentless pursuit of material affluence and the extraction of resources at a rate and scale beyond what is necessary for human sustenance (Moolakkattu, 2010). In 2007, the world-average ecological footprint was 2.7 global hectares per person, yet the amount of biologically productive land and water available per person was 1.8 global hectares (Global Footprint Network, 2010). As Gandhi predicted, humanity has exceeded the available supply of natural resources by 33% through overexploitation (Rees, 2010).

Despite increased concerns for sustainability and the global economic downturns starting from 2008, demand for luxury goods has remained robust, while the sales of other goods have significantly fallen. For example, in Britain, spending on luxuries has increased by 50% in the last decade, compared to a rise of 7% on basic goods (Keane & McMillan, 2004).

Luxury objects are embedded in certain settings, such as boardrooms, casinos, hotels, and retail stores, in which they create a distinctive environment and implicitly communicate certain value, mood, and behavioural norm. What meanings do luxury objects convey? What psychological effects do luxury objects have on people? Can luxury goods exert automatic effects on individuals' social motivation and behaviour?

To address these questions, chapter 1 consists of a literature review within the logic of the investigation on the implicit link of luxury and self-interest. The chapter begins with a historical

conceptualization of luxury. It explores the transformation on the evaluation of luxury, from a negative moral connotation in medieval Christendom, to a positive commercial discourse at the present. Next, I outline some contemporary approaches to conceptualize luxury. One major theme in experiential approaches reveals that luxury is related to the concepts of self-gratification and personal desire. To help me investigate psychological effects of luxury, I discuss the use of priming technique in cognitive psychology literature. Experimental priming allows me to examine the representation of luxury construct in memory and its associated behavioural responses. Finally, to investigate self-interest, I will review two theoretical frameworks of decision-making behaviour—the social value orientation framework and the commons dilemma paradigm. The frameworks are utilized to derive specific predictions regarding the priming effects of luxury on social motivation and behaviour in situations of interdependence.

1.2 Historical Investigation of Luxury

1.2.1 Historical Ideas of Luxury — From Plato to Marx

The concept of luxury is deeply implicated within the broader context of philosophical, political, and economic history. In Berry's (1994) historical account of luxury, the ancient Greeks established the classical paradigm of luxury. According to this paradigm, luxury is a pejorative term, denoting lasciviousness and self-indulgence, and serves as an impetus for endless pursuit of prestige, money, and sex. Early Greek philosophers, such as Plato, viewed luxury as an insatiable desire that, if left unchecked, leads to the ruin of civic morals and social order. Similarly, Roman moralists and legislators, such as Cato the Elder, assumed that luxury perpetuates extravagance and corruption at the expense of public interest. In their perspective, this destabilizing effect of luxury on social structure requires institutionalizing means for

regulation, such as restricting the number of guests at a banquet (the lex Orchia), forbidding considerable inheritance of an estate to women (the Voconian law), and other sumptuary laws.

With the rise of medieval Christendom, luxury became associated with man's libidinous nature. Substantiated by divine authority, luxury was regarded as a sin, both a violation to chastity and a threat to salvation. In addition, pre-modern Christian perspective accentuated the misogynous association to luxury, in the form of mythology that Eve seduces Adam to pluck the fruit of the forbidden tree (Prusak, 1974). The longstanding association between luxury and women is implicitly reinforced by the extensive use of sex appeals in advertisements today.

During the 17th and the 18th centuries, the introduction of commercialism and the expansion of the middle class provoked a controversial evaluation of the classical paradigm. Advocates of commerce, such as Barbon and Mandeville, formulated the modern paradigm by declaring that luxury, albeit sinful, is in fact a public benefit (Berry, 1994). According to Mandeville, human behaviour is instinctually guided by pleasure seeking and pain avoidance. By naturally acting out of self-interest and indulging in luxuries, the rich stimulates consumption and contributes the expansion of commerce, trade, and employment. Evaluations of luxury gradually shifted from a morally censorious attitude to a simple connotation of economic advantage. Also, the language of luxury evolved from a traditional expression of aristocratic extravagance to a broader discussion of comfort, utility, and aesthetics.

According to Berry (1994), the "de-moralization," of luxury has three important implications. First, luxury has become a sign of cultural refinement---that is, the diffusion of commodities through commerce is considered civilizing, because access to them is no longer restricted to elite classes. Second, social order is no longer regulated by virtue and frugality; public benefits accrue from the pursuit of individual self-interests. This contention was strongly

advocated by Adam Smith, who argued that "individual greed and acquisitiveness were necessary prerequisites for the stimulation of the economy" (Hilton, 2004, p. 102). Third, if past "luxuries" have now become "necessities," an important implication is that human needs are fluid and insatiable. According to Marx and other modern thinkers, this mutability can be manifested as "progress." On the contrary, classical thinkers viewed human needs as permanent, fixed, normative, and subjective to corruption by change.

1.2.2 Morality of Consumption

The process of de-moralization, however, did not go unchallenged. Critiques of luxury are subsumed under a broader debate of consumption morality. To address why consumption is inherently a moral issue, Wilk (2001) outlines explanations from three historical approaches in social sciences (psychology, sociology, and political economy).

First, according to psychoanalytic approach, desire for consuming luxury brands is considered a fetish (Koyama, 2013). A fetish is a substitute for an ideal ego during infancy when a child enjoys unconditional love from the affectionate mother. Fetish is developed from fixation (persistent focus on the id's pleasure-seeking energy) on objects early in life when a child is devoid of maternal love. Thus, materialism is a poor substitute for meaningful social relationships. In a broader context, the acquisitive nature of modern societies represses individual creative energies to beneficially transform libidinal drives.

Second, in the sociological-economical approach, Veblen (1899/2001) introduced the concept of conspicuous consumption in his seminal work, *The theory of the leisure class*. Veblen analyzed the lavish expenditure of the nouveau riche, who emerged from the accumulation of capital wealth during the second industrial revolution. Conspicuous consumption, in this historical context, refers to the acquiring and exhibiting of expensive items in order to publicly

display one's economic power. Veblen further developed the concept of "invidious comparison," which refers to the evaluation of individuals' worth by ranking themselves and others on the basis of inferred wealth. Invidious comparison leads to "pecuniary emulation," or the act of improving one's relative status by emulating the wealth of higher status members, primarily through imitation of their spending habits. Therefore, conspicuous consumption is solely driven by the attainment of "the esteem and envy of fellow men" (p. 32). The flaunting of luxury possession, Veblen believed, is frivolous, extravagant, and reflective of shallow values.

Third, Karl Marx's (1932/1844) political-philosophical approach emphasizes that the capitalist economic system is inherently dehumanizing because it is embedded of two notions: commodity fetishism and estranged labor. Commodity fetishism refers to the perception that a commodity's monetary value is objective, intrinsic, and fixated within that commodity, independent of its social values (e.g., amount of labour). Because the criterion for assessing a commodity is solely based on its price, capitalists, who are primarily interested in accumulating profit, extract maximum labour at minimum cost. Workers, on the other hand, not only suffer from impoverishment but also experience estrangement from their labour. As a labour becomes objectified, the exploited worker approaches his work solely as a means for survival and is deprived of a sense of autonomy and self-worth.

A more contemporary critique of luxury, drawing from evolutionary biology and psychological research on happiness, is addressed in Frank's (1999) book, *Luxury Fever*. The work documents the rapid surge of luxury spending in Western industrialized societies. Frank notes that when an individual's income level has reached beyond a certain threshold, life satisfaction does not increase correspondently, because the consumer quickly adapts to new circumstances.

Similar to the notion of conspicuous consumption, luxury fever refers to the circumstance in which people pursue expensive goods and services primarily to increase their relative social status (Frank, 1999). However, if everyone competes this way, *relative* consumption (which is associated with subjective well-being) remains constant, whereas *absolute* consumption and negative outcomes (such as bankruptcy and resource degradation) increases. This problem is analogous to negative externalities (Pigou, 1912), social traps (Costanza, 1987), social dilemmas (Ostrom, 1990), and the tragedy of commons (Hardin, 1968).

In sum, values and meanings attached to luxury are deeply intertwined in cultural, social, and political climate of each historical epoch. Overtime, luxury has gradually lost its negative, morally censorious overtones of classical antiquity. With the new age of political liberalism, luxury has transformed into an impetus for trade and commerce. Values attached to luxury are constantly evolving, because they reflect the discourse on morality, freedom, socialism, and human nature. On a smaller scale, individuals' impressions of luxury may vary from adoration to rejection, which often reflect their general attitude toward the societal system (Reich, 2005).

1.3 Contemporary Issues in the Conceptualization of Luxury

1.3.1 Ambivalent Attitudes toward Luxury

A discussion on attitudes toward luxury is necessary, because what is considered a "luxury" is primarily determined by an individual's perception (Vigneron & Johnson 2004). As early as the first century AD, Roman poet Statius (1990) portrayed a significant tension between admiration and contempt towards luxury. In his collection of poetry, the *Silvae*, Statius provided vivid descriptions of the emperor's bathtub, marbled decorations, mosaic floors, while glorifying the imperial architectures with splendor and magnificence. However, his encomiastic language and overt flattery were interpreted as a subtle criticism of Roman aristocracy (Newlands, 2002).

In the past millennium, the perpetual philosophical controversy on the consumption of luxury and the abstract nature of luxury itself has generated consumers' complex and ambivalent attitude today (Dubois, Laurent, & Czellar, 2001). Complexity is represented by multiple and interrelated attitudinal components. Ambivalence is manifested by the experience of having both conflicting reactions (i.e., both positive and negative evaluations) of luxury. Luxury intrigues and repels. The very notion of luxury has been described as both desirable and condemnable, as prosperity and sumptuousness, and as an ally and a foe of social progress. This simultaneous avoidance and attraction properties in luxury illustrate the nature of duality. Ambivalent attitude towards luxury not only exists across individuals, but also arises within an individual. For example, some may openly condemn flashy cars, but secretly crave them, while others may appear proud of their possessions, but privately feel ashamed of owning them. Furthermore, self-reported attitudes toward luxury are not always consistent with luxury consumption behaviours (Otnes, Lowrey, & Shrum, 1997).

1.3.2 The Paradox of Luxury Marketing

The ambivalent attitudes toward luxury also arise from existing promotion discourse. Luxury has a wide appeal presumably because of its exclusiveness and scarcity. However, this appeal creates a paradox phenomenon (Catry, 2003). On one hand, marketers aim to expand sales through mass marketing; on the other hand, they do so by proclaiming their products as "luxury," implying exclusiveness and rarity. By mixing mass and class, how can companies strive for maximum sale volume without compromising the cachet offered by luxury? To compound this problem, the word "luxury" has become an overused clichéd in promotional discourse to label virtually everything (Vickers & Renand, 2003).

1.3.3 The Rise of Masstiges

An increasing number of non-luxury brands have introduced "masstiges" to cater a growing segment of middle-market consumers (those with income of $40,000 and above). Masstiges has been described as "prestige to the masses" or "new luxury." Masstiges are affordable premium products that symbolize prestige and imitate artisanal touches of "classic luxuries" (Silverstein & Fiske, 2003). Examples of masstiges are Godiva chocolates and Coach handbags. Thus, luxury is being "democratized" (Tsai, 2005) because its underlying consumption is no longer guided by the principle of rarity, as seen in "old luxury," but focuses on hedonistic experience offered by "new luxury" accessible to many consumers.

1.3.4 The Challenges of Defining Luxury

The word *luxury* is derived from the Latin word *luxus*, which means extravagance, and *luxuria*, which means opulence ("Luxury," 2008). Originally, luxury denoted "sexual intercourse" in the 13th century, "sinful self-indulgence" in the 14th century, and "habit of indulgence" in the 17th century. By the late 19th century, most lexica of luxury share the notion of "beyond necessity." Definitions of luxury in many dictionaries emphasize the non-essential nature by adopting terms such as extravagance, indulgence, and sumptuousness.

Although the term "luxury" is loosely used in everyday language, the academic literature offers many different definitions. For example, luxury can be defined by its concrete attributes or observable characteristics (Heine & Phan, 2011), such as price (i.e., the highest-priced offerings in any product or service category), quality (i.e., manufacturing time, effort, and expertise), and product attributes (e.g., craftsmanship and materials of higher value). However, with the introduction of masstiges and the increasing quality control of lower-end brands, high price and quality are not suffice to represent luxury's underlying construct.

The most prevalent definition of luxury is associated with superfluity. That is, luxury is considered something more than necessary and ordinary (Bearden & Etzel, 1982). Yet, many people spend a sizable proportion of their income on non-luxury items that are neither functional nor essential. Therefore, the notion of superfluity is contested in scholarly debate. Some scholars contested that luxury goods are, in fact, functional, because they satisfy human desire by offering symbolic benefits (e.g., sensuality, hedonism) rather than the essentialist notions of practicability and utility (Giacalone, 2006; Goody, 2006). Thus, luxury has been defined by abstract associations such as "dream formula" (Dubois & Paternault, 1995) and "source of sensual pleasure" (Dubois, Laurent, & Czellar, 2001).

Others assert that luxury should be characterized on the basis of resource availability or exclusivity (e.g., Lynn, 1991; Verhallen, 1982). To them, luxury involves rarity. With their limited common access, luxuries convey prestige and distinctiveness in the hands of a privileged few (Verhallen & Robin, 1994). However, Kapferer and Bastein (2009) argue that luxury is primarily associated with cultural sophistication. Objective attributes, such as limited supply, are poor indicators of upper-class taste. Therefore, Kapferer (1997) emphasizes the aesthetic dimension by defining luxury as "beauty; it is art applied to functional items" (p. 253).

Despite a rapidly growing body of literature that attempts to define luxury, the existing definitions remain elusive. Dissenting and cynical views persist, and no consensus on an adequate definition can be established (e.g., Christodoulides, Michaelidou, & Li, 2009; Vigneron, & Johnson, 1999). The challenge of defining luxury is highlighted by Cornell (2002): "Luxury is particularly slippery to define. [It concerns a] strong element of human involvement, very limited supply, and the recognition of value by others are key components" (p. 47). Definitions in literature appear to vary in the degree to which emphasis is placed on multiple,

interdependent dimensions (e.g., economic, cultural, and psychological). Therefore, controversies about defining luxury may stem from a lack of integrative conceptual framework.

1.3.5 Relativity of Luxury

Luxury is subjective, conditional, multidimensional, and context-specific. This relativity suggests a fundamental indeterminacy in luxury: The judgment on what is rare, beautiful, and desirable depends on individuals and cultural contexts. Luxury can be conceptualized by five distinct types of relativity: cultural, situational, economic, regional, and temporal (Heine, 2012). The type of relativity determines how luxury should be defined, particularly within a discipline of study.

First, culture relativity refers to cultural variation in the desirability of a resource. Luxuries are culture-specific symbols of good taste; they express certain values by which social status can be determined. For example, shark fin soup is considered a delicacy in China, but it is not generally desired (and even condemned) in other parts of the world.

Second, situational relativity describes how an object can be perceived as necessary or luxurious, depending on the circumstances in which one approaches it. In one study, participants perceived a dental work as more luxurious if they anticipated how it would lead to more socially successful outcomes than contemplated on how it would cause considerable pain (Kemp, 1998).

Third, economic relativity refers to how the perception of luxuriousness is determined by one's ability to access to resources (Vickers & Renand, 2003). For example, a Toyota Prius may be considered a luxury to an indebted college student, whereas a BMW 7-series car may be perceived as a mediocre vehicle to a millionaire heir. Economic relativity not only implies an individual component but also suggests cross-national differences in terms of economic

development and standard of living (Christodoulides, Michaelidou, & Li, 2009; Matsuyama, 2002).

Fourth, regional relativity refers to the degree of luxuriousness as subjective to local availability. An item may acquire its luxury status by virtue of its rarity in one environment, while the same item is regarded as a basic, widely attainable commodity in a different environment. Goody (2006) provides the example of kola, which was originally worthless, naturally propagated, and openly harvested in the Asante forest of West Africa in the 19th century. However, once transported through the savannah regions to the north, kola nuts evolved into one of few stimulants (caffeine) Muslim were permitted to indulge in, and eventually became a valuable ingredient for kola wine in Europe. Today, kola has lost its luxury status after being transformed to a mass-marketed commodity, Coca-Cola, made by industrial chemicals rather than the wild product.

Fifth, temporal relativity represents the metamorphic nature of luxury through the passage of time. Many consumer goods, such as telephones and washing machines, were once recognized as luxuries. Now, they are generally regarded as necessities and have penetrated into the majority of households in many industrialized countries. The mechanisms behind this progress of change are technological advancement, societal trends, and increasing standards of living.

1.4 Disciplinary Perspectives on Luxury

Different disciplinary perspectives offer different approaches to conceptualize luxury. Four main interrelated perspectives on luxury can be identified in literature: marketing, economic, philosophical, and psychological perspectives. A full appreciation on the complexity of luxury requires understanding of different disciplinary approaches.

1.4.1 Marketing Perspectives on Luxury

Two lines of marketing research on luxury can be identified in the research literature: (1) luxury consumers' behaviour and characteristics; and (2) features that differentiate luxury products or brands from non-luxury ones (De Barnier &Valette-Florence, 2013). Often, the goal of marketing research is to provide practical insights into brand management, product design, marketing segmentation, and communication strategies.

One of the fundamental premises in marketing is that people buy products not for their utilitarian purposes, but for what they symbolize. In a recent attempt to distinguish luxury brands from non-luxury brands, Vickers and Renand (2003) developed a model to conceptualize luxury goods in term of fulfilling three types of consumer needs (functionalism, experientialism, and symbolic interactionism). The degree of luxury can be measured by the extent to which a particular product exhibits a distinctive mix of the three dimensions.

Functional symbolic needs motivate consumers to search for product features and benefits that provide solution to a problem. Brands positioned in terms of functionalism (utilitarianism) gratify consumers' externally generated needs for convenience, superior quality, and so on. Experiential symbolic needs represent consumers' desires for sensory pleasure and cognitive stimulation (Holbrook & Hirschman, 1982). Brands positioned for experiential needs appeal to consumers' internally generated needs for excitement, fantasy, and so on. Symbolic interactionism implies that consumers acquire a product for what it signifies in a society (Leigh & Gabel, 1992). Brands positioned in terms of their symbolic meanings attempt to associate ownership with status, group membership, and self-concept.

The existing marketing literature on luxury consumers covers various grounds, including consumption motives (e.g., self-indulgence) and preferences (e.g., country of origins),

sociocultural and situational influences on purchase decisions (e.g., normative influence), attitude toward luxury products or brands, luxury consumers' demographics (e.g., age, income, and ethnicity) and psychographics (e.g., personality, lifestyles, and values). Many of these topics overlap with psychology theories. As indicated earlier, attitudinal studies (e.g., Dubois & Laurent, 1994; Dobois, Laurent & Czellar, 2001) have demonstrated that consumers' attitude toward luxury varied considerably and often exhibit ambivalence. Recently, concerns over public safety presented by growing number of counterfeits worldwide attract empirical research on motivations behind the acquisition of counterfeit luxury brands (e.g., de Matos, Ituassu, & Rossi, 2007; Huang, Lee, & Ho, 2004; Phau & Teah, 2009; Wilcox, Kim, & Sen, 2009).

1.4.2 Economic Perspectives on Luxury

This perspective on luxury focuses on the influence of pricing strategies to establish the "exclusivity" of luxury goods. Simply put, high pricing invokes a sense of rarity. In economic terms, luxury is defined as any goods with income elasticity of demand greater than 1 (Deaton & Muellbauer, 1980; Douglas & Isherwood, 1979). In other words, the willingness to pay for luxury goods increases more than a proportional change in income.

However, this definition has been challenged by three phenomena documented in economic psychology literature (Leibenstein, 1950). Demand for a luxury item can (1) increases with the proportion of others, usually of relatively higher income levels, consuming it (bandwagon effect), (2) decreases with the proportion of others, usually of relatively lower income levels, consuming it (snob effect), and (3) decreases when the price is lower and the item is no longer perceived as exclusive (Veblen effect). The three phenomena violate the predictions made by the law of demand, which posits that purchasing decisions are solely based on price and utility.

These three phenomena (bandwagon effect, snob effect, and Veblen effect) are built upon the assumption that individuals are concerned about how they are perceived by others (Corneo & Jeanne, 1997). The Bandwagon effect and the snob effect represent two types of incentives for conspicuous consumption. A bandwagon effect occurs with the desire not to be identified with the poor (i.e., the desire to conform as the number of consumers of the good increases). When the consumption of the good becomes too prevalent, a snob effect develops with the desire to be identified with the rich (i.e., the desire for differentiation, to be unique and exclusive).

Consequently, both conformism and snobbism give rise to the Veblen effect—the demand for a luxury brand increases with price (Leibenstein, 1950). Contrary to the conventional demand curve that exhibits a negative slope (an inverse relationship between price and demand), conspicuous goods may have demand curve that exhibits positive slope (Coelho & McClure, 1993).

1.4.3 Philosophical Perspective on Luxury

The philosophical perspective on luxury emphasizes the notion of personal desire. To fully understand this notion, a distinction between luxury and necessity is crucial. According to Sombart (1967/1912), necessities are indispensable for maintaining a minimal human functioning, whereas luxuries are sought for sensory pleasure and sexual gratification. Similarly, Castarède (1992) maintains that luxury denotes sensuality: Rich tastes, voluptuous images, uplifting aromatics, and feather-soft texture.

Berry (1994) offered one of the most comprehensive conceptual schemes on luxury, based on the distinction of needs and wants. In his view, needs and wants are not arbitrary categories, but two ends of a continuum. Basic needs, such as food and water, are fundamental requirements for human life (Minogue, 1963). They are ontological (derived from the conditions

of being humans), and transcendent through time and culture. Acknowledging Wiggins (1985), Berry describes needs as "the way the world is" (p. 119). For example, dietary iron is necessary to prevent anemia (that is how the world operates), independent of an individual's desire to consume red meat. In contrast to needs, which are universal, finite, unintentional, and not privileged, wants and desires (both are synonymous) are infinite and insatiable. Wants are "principle of actions" (Thomson, 1987, p.16), because they specify or particularize how to satisfy fundamental needs. For example, everyone needs food, but whether we desire ice cream or steak depends on personal preference, culture, and many other factors.

This conceptual distinction allows Berry (1994) to more precisely dissect the luxury construct in relation to desire and needs. According to Berry, luxury is associated with desires, albeit which are built upon basic needs. This idea leads to identification of three main characteristics of luxury: refinement, positively pleasing, and widely desired. First, luxury is progressive refinement of a basic good. As such, luxury objects represent highest level of refinement in fulfilling four categories of universal needs for sustenance, shelter, clothing, and leisure. For example, in the category of sustenance, the concept of "gourmet" represents highest improvement of a basic food.

"Refinement" is qualitative, and may refer to the manufacture of excellence, sophistication, impeccable quality, and many other attributes because the process of refinement is, by principle, infinite (Hampshire, 1960). Luxuries are subjective to emergence of desires that, once fulfilled, are re-incited by further modification and progressive improvement of existing goods. Refinement is not quantitative, because having more of something appears squandering (Sombart, 1912/1967). For example, the stomach's natural capacity limits the amount of bread one can ingest. Refinement, in this case, is not associated with the number of slices but implies

exceptional ingredient, exotic origin, freshness, and so on. The occasional banquets of prolonged fest in ancient Rome were interesting exceptions: The wealthy gorged on massive amounts of delicacies and purged between courses to allow more room for food.

Second, for a good to be desired as luxurious, it must be perceived as pleasing. In contrast to necessities, which are considered utilitarian and functional, luxuries are "objects of desire" because they usually offer bodily and sensory pleasure within the four categories of basic needs. For example, luxury food is widely desirable not only because it symbolizes prestige but also because it is pleasing to the palate. According to Hutcheson (1758), necessities are negatively desired because they relieve physiological states of discomfort (i.e., removing negatives), whereas luxuries are positively desired because they offer extra pleasure beyond bare necessities of life (i.e., adding positives).

Similarly, necessities can be conceptualized as minimal goals, whereas luxuries are theorized as maximal goals (Brendl & Higgins, 1996). Scitovsky (1976) identifies the former as a passive state of deficiency prevention, in contrast to the latter, as an active state of motivation for seeking gratification of senses. To illustrate, any piece of clothing is considered a necessity to someone who feels cold. However, if a person is looking for something more than warmth, cashmere becomes an object of desire if it is preferred over a sheepskin. Hence, luxuries represent indulgence, privilege, freedom of choice, and intentional goals.

Finally, to be perceived as luxurious, a good must not only be pleasingly and qualitatively refined, but it also must be desired by many yet attained by few (Berry 1994). Luxuries appeal primarily because they are associated with universal generic needs. Members of contemporary Western societies typically conceive caviar, the Biltmore Estate, a Chanel dress, and a weekend getaway at an island resort as luxurious. Members of earlier or different cultures would have

specified other goods or experiences, but the same four basic categories (food, shelter, clothing, and leisure) could be identified. Berry emphasized universal appeal in his definition of luxury by listing three categories of goods that are not considered luxurious: those that are deemed socially or culturally necessary for, have sentimental value to, and are desired fervently or coveted by one or a few individuals. For example, a special edition coveted by a book collector is not a luxury, nor is an interior water-closet legally mandated in dwellings of a city.

Luxury, as an "object of desire," does not necessarily imply uselessness or anything more than necessary. In fact, the notion of superfluousness cannot adequately capture the meanings of luxury. Berry (1994) presents an analogy to illustrate the distinction of superfluousnes and luxury: If six screws are suffice to securely attach a shelf, any additional screw is unnecessary, redundant, and certainly not luxurious. Likewise, a handful of matches to ignite a cigar is not luxurious, nor a dozen of waiters to serve a table. Recall that luxuries are qualitative refinements of basic goods. Therefore, luxuries are substitutes of necessities. If an old rusty bucket of a car can take you from work to the beach, so can a Ferrari Daytona, but the latter probably offers additional sense of pleasure and excitement.

1.4.4 Psychological Perspectives on Luxury

The psychological viewpoint on luxury emphasizes consumption motives. Two primary focuses on psychology's perspective will be outlined: (1) psychological distinctions between luxury and necessity conceptualizations, and (2) internal or external (or interpersonal) influences on luxury consumption motives.

1.4.4.1 Luxury-Necessity Distinction. The behavioural psychology approach offers an essential distinction between luxury and necessity. One fundamental principle in behavioural psychology is operant (instrumental) conditioning (Skinner, 1953). The basic premise is that

behaviours which are reinforced will be strengthened (increase the likelihood of occurring in the future), whereas behaviours that are punished will be weakened (decrease the likelihood of occurring in the future). Luxury and necessity represent two types of reinforcement. Positive reinforcement strengthens behaviour (e.g., consumption of a luxury good) by *presenting* a motivating or reinforcing stimulus (e.g., pleasurable outcomes). Negative reinforcement strengthens behaviour (e.g., consumption of a necessity) by *removing* or avoiding an aversive stimulus which follows or contingent to that behaviour. This distinction was demonstrated in a study in which a piece of pie was perceived as more luxurious if participants expected how delicious it would taste, rather than approaching it with extreme hunger (Kemp, 1998).

According to humanistic psychologists, such as Maslow, conditioning principles are insufficient to capture the complexity of human behaviour because they exclusively focus on overt behaviour. In contrast, one fundamental belief in humanistic psychology is that human actions are directed toward goal attainment. Kemp (1998) identifies the necessity-luxury continuum in Maslow's (1970) hierarchy of needs, whereby individuals are motivated to fulfill advanced (growth) needs only when basic (deficiency) needs are met. The hierarchy of needs is presented as a pyramid with levels that progress from the most fundamental, physiological needs (necessity) at the bottom, social needs at the middle, to self-actualization (luxury) at the top. As individuals progress successively through the pyramid, needs become increasingly psychological. At the pinnacle, self-actualization pertains to the maximization of one's potential through acquiring spiritual enlightenment, aesthetic experience, and appreciation of culture. Luxury consumers, many of whom have already fulfilled the lesser needs in the hierarchy, may pursue happiness through emotional and life experiences rather than through accumulating

material possessions (Danziger, 2005). After all, many people in fine dining pay more for the experience than for good food.

1.4.4.2 Luxury Consumption Motives. Why do people purchase luxuries? A dominant perspective in literature suggests that motive for luxury consumption is based on the assumption of "buying to impress others" (Vigneron & Johnson, 1999), which originated from Veblen's (1899/2001) notion of conspicuous consumption. In other words, motivations for acquiring luxury brands are largely attributed to perceived social utility (e.g., prestige value and social validations).

"Buying to impress others" can be explained in several psychology theories. According to social comparison theory (Festinger, 1954), people seek for self-evaluation by comparing themselves to others. As a result, consumers either adopt a prestige brand to be perceived as unique from others (Snyder & Fromkin, 1977) or conform to their desired social groups by possessing products that carry membership connotations (Mason, 1993; Solomon, 1983). Similarly, impression management theory (Schlenker, 1980) posits that consumers who engage in conspicuous brand usage are driven by an ulterior motive to establish and maintain a favorable image in the presence of others (Sallot, 2002).

A growing number of scholars (e.g., Coulter, Price, & Feick, 2003; Hansen, 1998; Tsai, 2005) have expanded the scope of this traditional "buying to impress" framework by incorporating more intrinsic, personal-oriented consumption rationales. They have found that a substantial number of luxury consumers seek to acquire two types of benefits unrelated to social utility: practical utility and hedonism. First, consumers with utilitarian needs seek luxuries in order to help solve a particular consumption problem (Vigneron & Johnson, 2004). Second,

consumers are motivated to purchase luxury brands in order to fulfill hedonic needs for sensory indulgence, emotional arousal, and fantasy (Silverstein & Fike, 2003).

Pleasure has been proposed as the primary motivator of people's behaviour (Dube & Le Bel, 2001). Hedonic needs are an affective dimension of consumption motivation; they feature intense feelings of exhilaration and self-directed pleasure (Snell, Gibbs, & Varey, 1995). Self-directed pleasure can be distinguished from other-directed pleasure, although both arise from hedonistic experiences (Dube & Le Bel, 2001). Luxury is primarily associated with self-directed pleasures, which comprised of bliss and ecstasy for the self, in contrast to other-directed pleasure, which is dominated by relational qualities, such as empathy, warmth, and love.

The link between luxury and self has been supported by empirical findings. In an fMRI experiment, participants were exposed to different car logs and imagined driving the brand of car associated with each logo (Schaefer & Rotte, 2007). Exposure to logos of value brands (e.g., Toyota) and logos of luxury brands (e.g., Ferrari) activated different cortical networks. Specifically, luxury brands activated medial prefrontal cortex (MPFC), a brain region that has been identified with self-relevant processing (Johnson et al., 2002; Ochsner et al., 2004), whereas familiar brands activated the dorsolateral prefrontal cortex associated with cognitive control (Gilbert & Fiez, 2004).

1.5 Luxury, Morality, and Self-Interest

A wide range of research and perspectives on luxury (e.g., Mandel, Petrova, & Cialdini, 2006; Tsai, 2005) reveals one common theme: Luxury belongs to the realm of personal desire (Kemp 1998; van der Veen, 2003). For example, anthropologist Twitchell (2003) states in his book, *Living it up: America's love affair with luxury*, that the growth of Americans' luxury

spending, despite the economic recession, is associated with the perpetuation of personal desire. Some indirect evidence on the implicit link of luxury and self-interest can be found in research on morality and wealth.

1.5.1 The Morality Dimension

What is morality? In a well-known scholarly debate, the so-called "Kohlberg-Gillian controversy," two distinctive perspectives on morality have generated. The first pertains to moral concern of *fairness*, including the notions of justice and the maintenance of rights. Proponents of this approach (Kohlberg, 1969; Kohlberg, Levine, & Hewer, 1983) argue that people use reason and objectivity when they evaluate their own actions. However, the ethics of justice as an universal abstract moral principle has been criticized for its disregard and devaluation of women's moral reasoning (Gilligan, 1982). Thus, the second, alternative perspective entails *care*, such as nurturance and concerns for the suffering of others.

Although Kohlberg's ethics of justice and Gilligan's ethics of care are fundamentally different, they nevertheless share the notion that morality concerns about the treatment of others. The most widely cited definition of morality in literature is "prescriptive judgments of justice, rights, and welfare pertaining to how people ought to relate to each other" (Turiel, 1983, p. 3). In philosophy literature, definitions of morality also stress standards of right or good conduct that avoid harm to others (e.g., Gert, 2010; Singer, 1979). However, conventional rules and practices that result in negative experiences of others do not constitute the morality domain.

1.5.2 Causes of Immorality

Many factors can facilitate wrongdoings, such as entitlement (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004), power (Fiske, 1993), demographic characteristics (Bucciol, Landini, & Piovesan, 2013), discrimination (Gaertner & Insko, 2000), and moral justification

(Anand, Ashforth, & Joshi, 2005; Tenbrunsel & Messick, 2004). Perhaps one of the oldest explanations in literature is the Western Judeo-Christian proposition asserting that the love of money is the root of evil. According to the Bible, "People who want to get rich fall into temptation and a trap and into many foolish and harmful desires that plunge men into ruin and destruction. For the love of money is a root of all kinds of evil" (Timothy, 6:9 New Revised Standard Version). In one Hong Kong study, employees' love of money, but not income itself, was significantly related to self-reported tendency to engage in unethical organization behaviours, such as theft and abuse of expense accounts (Tang & Chiu, 2003).

As mentioned, according to early Christian and biblical perspective, luxury was also associated with sinful transgression of satisfying bodily desire. Thus, feelings of shame and guilt function as internal inhibitions, and exercised self-control was considered a virtue (Berry, 1994). According to the most widely reversed moral guide in the history of humanity, could it be true that luxury causes immorality? To my knowledge, relatively little research was conducted on luxury and unethical behaviour. The concept of *luxury as sin* is inevitably value-laden, as they are considered by many to be a taboo, a controversial issue, or classical and biblical critiques, rather than an issue for objective inquiry (Vardi & Weitz, 2004). Regrettably, this may explain the reluctane to study luxury and unethical behaviour in academic research.

Some indirect evidence on the implicit link of luxury and immorality can be found in research on money and unethical behaviour. In several studies, exposure to cues related to abundance, such as a pile of cash, decreased feelings of personal connection to others (Mogilner & Aaker, 2009), provoked preferences to engage in independent but socially insensitive actions (Vohs, Mead, & Goode, 2006, 2008), led to more frequent cheating in an anagram task (Gino & Pierce, 2009), and triggered unethical intentions in a business decision task (Kouchaki, Smith-

Crowe, Brief, & Sousa, 2013). In field settings, passerby who handled money at an automated teller machine were less likely to help with a short survey and to warn a confederate that she dropped something on the ground (Guéguen & Jacob, 2013). In another field experiment, Yang et al. (2012) observed that vendors who handled dirty money were more likely to cheat customers in a Chinese farmer's market.

Wealth and status are also related to unethical behaviour. In a naturalistic study, the likelihood of breaking traffic laws while driving was a function of status vehicles (Piff, Stancato, Côté, Mendoza-Denton, & Keltner, 2012). Drivers of relatively higher vehicle status (e.g., Mercedes Benz) were more likely to cut off other vehicles and were less likely to yield to pedestrians than drivers of relatively lower status vehicles (e.g., Honda Civic). What explains the link between self-interest and socioeconomic status? Heightened self-focused tendencies among upper class individuals are accounted for by their abundant social and material resources, freedom, and independence from other (Kraus, Piff, & Keltner, 2009). These benefits may cause greater psychological entitlement and may increase the likelihood to engage in unethical behaviour. In contrast, lower class individuals, with their reduced material wealth and greater dependency, are more likely to demonstrate other-focused tendencies. Relative to their upper class counterparts, lower class individuals exhibit more intense cardiovascular reactions to potential social threats (Chen & Matthews, 2001) and are more empathically accurate in judging the emotions of others (Kraus, Côté, & Keltner, 2010).

Another plausible explanation may involve the psychological effects of luxuries possessed by the wealthy. Luxuries may activate personal desire and thus increase one's propensity to regard greed as beneficial. Upper class individuals are more likely to be surrounded by luxuries, causing them to focus on personal benefits. More direct evidence on the implicit link

of self-interest and luxury has been demonstrated by Chua and Zou (2009). In their study, participants exposed to images of luxury goods were likely to endorse self-interested business decisions, even at the expense of potentially harming the environment, compared to those exposed to mundane objects.

1.6 Investigation of Object Meanings

Some psychologists emphasize the role of ecological context on human behaviour. In particular, Barker and Wright (1995) introduced the concept of behaviour settings to describe consistent patterns of behaviour in certain settings. Although most psychologists acknowledge the interplay between "the person and the situation" (Ross & Nisbett, 1991), the "situation" is a narrow conception of the social context largely reduced to interpersonal influences, that is, "a world of actors devoid of things" (Joerges, 1988, p. 220). Relatively little interest is placed on the potential impacts of material objects, or "props," that help to create a distinctive situational context. In fact, William and Costall (2000) noted that psychologists tend to avoid physical objects as part of their enquiries. Even when physical objects are considered, they tend to be regarded as abstract, decontextualized, and inert. Objects seem to exist "primarily in a physical, asocial realm, as distinct from the socio-cultural domain of people" (William & Costall, p. 97).

1.6.1 Anthropology and the Material Culture

On the contrary, anthropologists often make physical objects their unit of analysis in their investigation of human culture. They argue that the ways in which people perceive, relate, and interact with material artifacts are crucial for understanding cultural, political, economic, and value systems in a given culture in which those objects are deeply ingrained (e.g., Dittmar, 1992). Therefore, material objects are conceived to be imbued with implicit meanings, values,

and emotions beyond their physical shapes and functions (Dant, 1999). Objects are not merely representations of some aspects of a pre-existing culture but a medium through which they produce or permit certain behaviours or practices. This is developed through objectification, a cultural process in which people and things are intertwined through a reciprocal relationship (Miller, 1998). Thus, social agents transform themselves (e.g., class, dispositions, and social roles) by commodities and transform commodities with values and meanings imposed to them.

1.6.2 Priming in Psychology: Implicit Construct Activation

Priming may offer insights on the psychological impact of physical objects drawn from relevant situations. Priming is the activation of knowledge following exposure to a stimulus. Priming effects are prevalent in psychology literature since the seminal work by Higgins, Rholes, and Jones (1977). Priming research focuses on the temporary activation of mental representations (semantic, procedural, or experiential forms) produced by prior processing of a stimulus and the effects of this activation on various psychological phenomena (see Bargh & Chartrand, 2000).

A standard priming procedure involves two stages (Fiedler, 2003). In the afferent (priming) stage, a stimulus is presented to activate relevant mental representations. In the efferent stage, the activated construct is hypothesized to influence perception and judgment in an ostensibly unrelated task. Therefore, the afferent stage is said to enhance the accessibility of a construct (i.e., the readiness with which a stored construct is retrieved from memory) and the efferent stage is said to increase the applicability of the primed construct to a target stimulus (Förster & Liberman, 2007). Implicit priming techniques have enabled investigation on the effects of subtle, or even subliminal, stimuli on subsequent impression, decision making

processes and, to some extent, behavioural responses (e.g., Bargh, Chen, & Burrows, 1996; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; for a review, see Bargh, 1994).

Despite the abundant stream of priming research, relatively little attention has been devoted to the potential priming effects of objects drawn from a relevant social context. The reason for this gap is that the focus on priming research has been dedicated to cognitive accessibility, defined as the potential that knowledge stored in memory will be activated for potential use in another task (Higgins, 1996). Hence, most priming research examines a variety of determinants of cognitive accessibility (e.g., expectations, motivations, and recency of activation) rather than contextual variability that may cause a construct to be accessible (see an exception in Higgins & King, 1981).

In addition to subtle or subliminal presentation of words and images, the environment or even the mere presence of physical objects can exert involuntary and perhaps unconscious effects on behaviour. Perhaps the most famous work on priming of objects is the classical study on aggression conducted by Berkowitz and Lepage (1967). They demonstrated that the presence of an aggressive stimulus, such as a gun, increased the number of shocks participants delivered to a confederate. In another study, exposure to images of objects common to the domain of business (e.g., a boardroom tables and briefcases) as opposed to neutral objects (e.g., toothbrushes) increased the amount of money participants proposed to retain for themselves in an ultimatum game (Kay, Wheeler, Bargh, & Ross, 2004). These findings emphasize the apparent role of mundane objects, commonly and subtly embedded in social contexts (e.g., business settings) in influencing interpersonal behaviour. In this fashion, the mere perception of objects in a context increases the accessibility of relevant constructs, which in turn activates corresponding behaviour (Dijksterhuis & Bargh, 2001).

The conjunction of two disciplines—anthropology's focus on material culture and psychology's tradition on utilizing priming techniques—is conducive to shedding light on the influence of objects on decision-making and behaviour. Because priming research has established the effects of semantic and associative prime (Higgins, 1996), more research is required to predict whether exposure to certain inanimate objects, such as luxury goods, can automatically produce effects on social preferences and choice behaviour in resource allocation. If luxury goods can evoke strong, implicit associations to self-indulgence and self-interest, then when embedded in ambiguous situations, exposure to luxuries may prompt (a) an increase in the accessibility of mental constructs related to meanings generated by luxury objects (b) an automatic, unintended effect on the perception of a social context, and (c) a corresponding effect on social judgments and behaviours.

1.7 Social Motivations

To investigate the psychological effects of luxury on social preferences, the theoretical background on social motivations should be addressed. Social motivations have been studied extensively in several disciplines (including economics, sociology, and political sciences) and have been variously referred to as social preferences, social motives, other-regarding preferences, welfare-tradeoffs ratios, and social value orientations.

Rational choice theory provides a basic framework for understanding social motives. Central to this theory is the assumption of *narrow self-interest* or *economic man*, which postulates that decision makers (DMs) seek to maximize their own material payoffs while often neglecting the relative payoffs of others. The assumption of narrow self-interest established a platform for investigating social behaviour and subsequently influenced the development of

game theory (Luce & Raiffa, 1957; Von Neumann & Morgenstem, 1944) and social exchange theory (Homans, 1961; Thibaut & Kelley, 1959).

However, the assumption of rational self-interest, albeit important, is theoretically incongruent with the interdependence theory (Kelley & Thibaut, 1978) and is empirically challenged in several programs of research. First, research on empathy has demonstrated that empathic emotion evokes altruistic motivation to increase the other's welfare in a single-trial prisoner's dilemma, even when the other has already made a non-cooperative choice (Baston & Ahmad, 2001). Second, research on justice and morality reveals that many people use fairness as a guideline for interpersonal behaviour, including allocating resources to self and others (Allison & Messick, 1990; Tyler, 1994). More recent evidence supported the notion of altruistic punishment, which suggests that individuals punish defectors in order to advance fairness and equality (Fehr & Gächter, 2002). Third, research in mixed-motive social dilemmas research (e.g., prisoner's dilemma) has demonstrated considerable variation in social preferences. These lines of research suggest that the "selfish axiom" (Henrich et al., 2005) is limited in scope because it does not take into account the relative payoffs to others.

1.7.1 The Social Value Orientation Construct

If the postulate of narrow self-interest is overestimated, what exactly is the magnitude of concerns people have for others? According to Deutsch (1949), people vary in their motivations for, or goals upon which they evaluate and adapt to various situations of interdependence (see Dehue, McClintock, & Liebrand, 1993). Similarly, Van Lange, De Cremer, Van Dijk, and Van Vugt (2007) broadly conceptualize social value orientations (SVO) as "the set of cognitions, affect, and motivation that underlie interpersonal behavior and social interaction" (p. 541). According to the SVO framework, individuals' social value orientations determine the relative

weight of outcomes they assign to themselves and others and therefore influence strategies and behaviours in resource distribution between themselves and others (Messick & McClintock, 1968). This notion is conceptually developed from the principles of interdependence theory (Kelley & Thibaut, 1978) and derived methodologically from assessing choice behaviour in a series of allocation tasks known as decomposed games (Messick & McClintock, 1968; Pruitt, 1967).

A person's social value orientation (or social motivational orientation) falls within one of six categories (Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007): two proself orientations (individualism, competition), three prosocial orientations (egalitarianism, cooperation, altruism) and one antisocial orientation (aggression). DMs exhibit a particular SVO when they attempt to maximize their outcomes while being indifferent to the other's outcome (individualism), maximize the difference between their outcomes and the other's outcome (i.e., enhance comparative advantage for oneself; competition), minimize the difference between their outcomes and the other's outcome (egalitarianism), maximize the other's outcome, even at a cost to themselves (altruism), maximize joint outcomes (cooperation), or minimize the other's outcome (aggression). The three social value orientations originally proposed by Deutsch (1960)—individualism, cooperation, and competition—have received greatest attention in the SVO literature.

Social value orientations, revealed by brief measures of allocation choices, have been demonstrated to account for cognitions and cooperative behaviours in various contexts, including negotiations (De Dreu & Boles, 1998), prisoner's dilemmas (e.g., Simpson, 2004), social dilemmas (reviewed in Bogaert, Boone, & Declerck, 2008), commons dilemmas (e.g., Roch & Samuelson, 1997; Samuelson, 1993), and various forms of prosocial behaviour (e.g., McClintock

& Allison, 1959; Van Lange, Van Vugt, Bekkers, Schuyt, & Schippers, 2005). In a recent meta-analysis, SVO was shown to have a significant small-to-medium effect on overall cooperation in social dilemmas (Balliet, Parks, & Joireman, 2009).

1.7.2 Measurements of Social Value Orientations

Several measures have developed to assess social value orientations (for reviews, see Au & Kwong, 2004 and McClintock & Van Avermaet, 1982). They emerged from the pioneer work of Messick and McClintock (1968) on decomposed games (DG; see also Pruitt, 1967). A DG is any two-person payoff structure in which a DM makes unilateral choices (i.e., one-shot individual decisions) among discrete options of predefined motivation goals. The standard procedure in a DG involves selecting a preferred alternative of numerical outcomes (represented by different distributions of points) to oneself and another person. A series of the DM's chosen options reveals a particular social value orientation.

To illustrate how social preferences are assessed by choices made in a decomposed game, consider a ternary choice among three allocation options (Table 1.1). In this example, a competitive DM would select Option A, an outcome that maximizes one's relative advantage over another person (500-50 = 450), even if personal payoff is lower than what they could gain in other options. A cooperative DM would choose option B, which generates highest collective outcomes (500+500 = 1000) and provides equity, defined as the smallest absolute difference between outcomes for self and other (500-500 = 0). An individualistic DM would choose Option C, which yields the greatest absolute payoff for self (600 points), irrespective of other's outcome (narrow self-interest). By choosing Option C over B, the DM receives an additional payoff of 100 points the expense of 200 points to another person.

Table 1.1
A Ternary Choice Among Three Allocation Options

	Option A	Option B	Option C
Points to self	500	500	600
Points to other	50	500	300

One important feature of DGs is the removal of mutual interdependence. DMs will not meet or interact with the anonymous other during or after the decisions are made. Neither will DMs receive feedback about the choices made by the other. Because the other person cannot affect the DM in anyway, potential confounds of strategic considerations (potential repercussion) can be eliminated and options chosen by DMs solely represent their intrinsic social preferences. Technically, a decomposed game is not a game, because only one DM is affecting allocation distribution outcomes between self and another person.

Griesinger and Livingston (1973) provided a graphical representation of motives behind individual choice behaviour in DGs (see Figure 1.1). In their geometric model, SVOs represent motivational vectors that extend from the origin of the Cartesian plane and intersect the coordinates of own-other payoff allocation options, with *x*-axis corresponds to the outcomes to self and *y*-axis corresponds to the outcomes to the other. Figure 1 depicts the geometric framework of SVO and the 4 exemplars of different own-other outcomes that represent idealized social preferences. For example, if a person would consistently choose the option which maximizes joint outcomes (perfect prosociality), the coordinates on the circle would be at $x = 85$ and $y = 85$, and the corresponding SVO angle would be 45°. This geometric model demonstrates that SVO can be conceptualized as a continuous construct, measured by the angular degree of motivational vectors

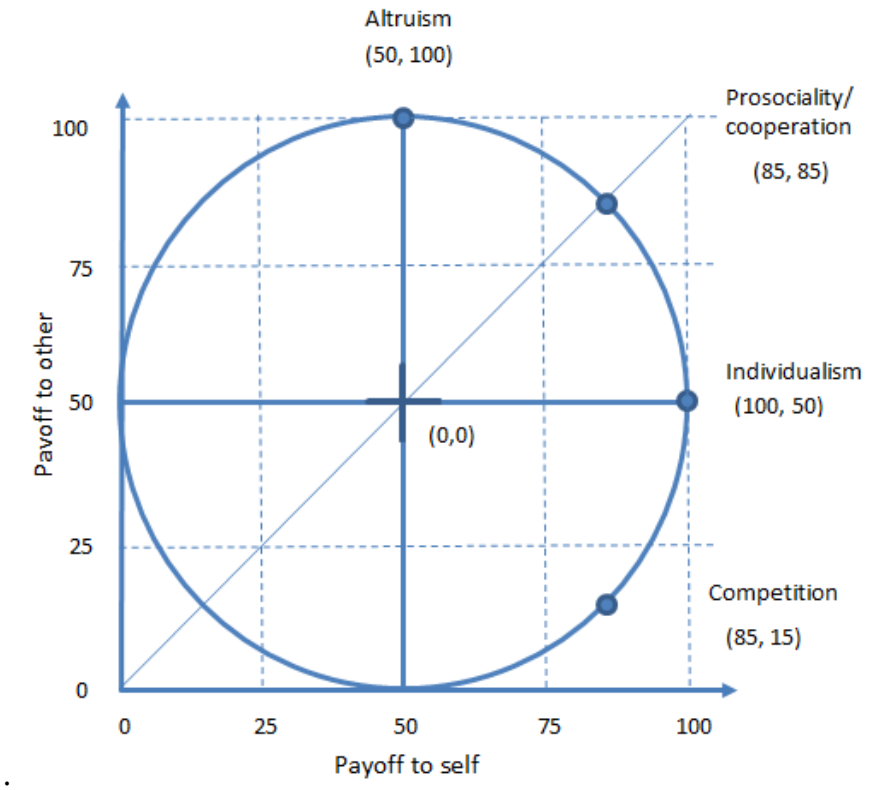

Figure 1.1 A graphical representation of the SVO framework.

To date, most decomposed game studies have used the triple dominance measure (TDM; Van Lange, Otten, DeBruin, & Joireman, 1997) and the ring measure (RM; Liebrand, 1984; Liebrand & McClintock, 1998). These measures produce categorical outputs of social preferences. That is, individuals are assigned to simple, archetypical SVO categories based on their allocation choices. However, a major limitation of these measurements is that SVO, in principle, is a continuous construct, but is assessed exclusively on a nominal scale. SVO corresponds to the quantitative pattern on how much a DM is willing to sacrifice outcome for oneself to benefit the other (Griesinger & Livingston, 1973). Categorizing continuous variables is problematic because it unnecessarily sacrifices statistical power, restrains further analysis, and

in some cases, contributes false significant results (Cohen, 1983; Irwin & McClelland, 2003; Rosenthal, 1979).

The bidirectional relation between theory and measurement has shaped conceptualization of SVO (Murphy & Ackermann, 2014; also see Sturm & Ash, 2005). On one hand, construction of measures requires theories; on the other hand, data obtained from an existing measure helps refine the original theory. The mainstream practice in personality research is to measure attributes, such as intelligence and traits, on continuous scales (Gangestad & Snyder, 1985). In contrast, the standard practice of assessing SVO has produced low-resolution data that is insufficient to capture inter- and intra-individual differences.

1.7.3 Situational Influences on Social Motivations

Relatively little effort has been dedicated to investigate the impact of situational influences on SVO. Most theoretical advancements of SVO are established by a more fundamental level of refining the concept itself, developing an integrative conceptual model, or constructing relations to other constructs, such as trust (Kanagaretnam, Mestelman, Nainar, & Shehata, 2009), mindfulness (Van Doesum, Van Lange, & Van Lange, 2013), and emotion expressivity (Shug, Matsumoto, Horita, Yamagishi, & Bonnet, 2010). Such focus has deflected attention away from identifying or describing situational influences of decision making.

Situational variables are important for understanding basic social motives. Personality research generally adopts an interactionist approach (Lewin, 1951) and recognizes that behavioural outcomes are influenced by a combination of personality traits and environmental factors. It also acknowledges that individual dispositions *can* change under different circumstances. In fact, to unravel the evolutionary roots of cooperation, examining situations in which two entities are facing is crucial (Pennisi, 2005).

At best, a few researchers have raised the issue on the "malleability" of social value orientations. MacCrimmon and Messick (1976) expressed a cautionary note in their approach to characterize social motives: "A question of psychological significance is the degree to which such motives are situationally, as opposed to dispositionally, determined… we do not want to leave the impression that when describing a motive…we have in mind a stable personality characteristics of a person" (p. 99). In fact, Van Lange (2000) argued that approaching interdependent others in the same manner across all situations could be a sign of dysfunctional functioning. To illustrate this malleability, the ways in which availability of outcomes is presented in an environment can influence the likelihood that a given motivational predisposition would predominate (McClintock, 1972). In particular, participants displayed bounded rationality (i.e., placed more weight on their own outcomes) when evaluating single outcome at a time rather than considering multiple outcomes at once (Bazerman, Loewenstein, & White, 1992).

Some research has examined the activation of a particular social value orientation within the context of interpersonal relationship. Specific features of relationship, such as high levels of commitment, are likely to activate more prosocial orientation to a significant partner than to strangers (Van Lange et al., 1997). Cooperation in mixed-motive situations is also contingent to the condition of relationship (harmonious or hostile) and the type of dispute (Loewenstein, Bazerman, & Thompson, 1989), as well as personality information about the interaction partner, such as intelligence and morality (De Bruin & Van Lange, 1999). Even slight degree to which the interaction partner is perceived as far, dissimilar, or competitive can activate competitive orientation (e.g., Herr, 1986).

1.8 Social Dilemmas

1.8.1 Is Self-Interest Beneficial to Humanity?

Scholars have long pondered the questions of whether human nature is essentially self-interested and whether selfishness is detrimental to humanity. The 17th Century English philosopher Thomas Hobbes was among the first to take perspective on human nature. In his book, *Leviathan* (1651/1996), Hobbes argued that human beings, in their primitive state, are solely driven by the pursuit of pleasure and avoidance of pain, with little or no regard for others. Because resources are scarce, people must compete with each other. This produces a "state of war" in which lives are "solitary, poor, nasty, brutish, and short" (Hobbes, p. 186). The solution is to develop a state of civility by appointing an authoritative government to enforce order and repress individual self-interests.

Three centuries later, the economist Adam Smith (1904/1977) contended that self-interest is not inherently detrimental. Without government intervention, individuals' efforts to maximize their own gains, through specialization and division of labor, involuntarily promote the economy. Smith used the phrase "beneficent invisible hand" to describe the natural mechanism through which private incentives in a competitive market ultimately drive collective benefits.

However, the rationale of "invisible hand" appears problematic with Lloyd's (1837/1968) observation on the continual devastation of pastoral commons in Old England. According to Lloyd, improvident use of these commons, rationally consulted by individual self-interests, would inevitably lead to their ruins. Lloyd's exposition is now identified as "tragedy of commons," a theory worthy to be further discussed later.

1.8.2 Interdependence Theory

Many research programs that investigate cooperation were stimulated by interdependence theory (Thibaut & Kelley, 1978). One major focus of the interdependence theory concerns the ways in which parties (individuals or groups) can affect one another's outcomes during interaction. To predict what will transpire in a social interaction between two people, three components should be considered: (a) *Person A's* needs, thoughts, and motives, (b) *person B*'s needs, thoughts, and motives, and (c) *the situation* confronted by the two people. This principle of interaction is referred to as the SABI model (Holmes, 2002; Kelley et al., 2003), and expressed by the extension of Lewin's (1935) equation, $I = f(S, A, B)$, where social interaction (*I*) is a function of the situation (*S*) and the two interaction partners (*A* and *B*).

1.8.2.1 Outcome Interdependence. To analyze a situation structure, interdependence theorists employ outcome matrices derived from behavioural game theory (Colman, 2003; Luce & Raiffa, 1957). An outcome matrix represents behavioural options for different outcomes of payoffs, as specified by players' collective strategies or actions. Schelling (1960/1980) distinguished three basic types of outcome interdependence by their covariance of interest (i.e., the degree to which the partners' outcomes are mutually beneficial): Zero-sum situations, zero-difference situations, and mixed-motive situations. The first type of interdependence is "zero-sum" situations in which one person's gain (or loss) inevitably entails a corresponding loss (or gain) for the other person. For every possible combination of strategies, the net benefit is always zero (i.e., the available resources remains constant). The outcomes have covariation of perfect noncorrespondence. Therefore, a "zero-sum" game is essentially a competitive situation constitutes of two parties with opposing goals (Deutsch, 1949). Examples of zero-sum games are gambling, chess, and tennis.

The second type of interdependence is "zero-difference" situations, in which a person's gains foster the other's gains, and a person's losses entail the other's losses. These outcomes have covariation of perfect corresponding pattern. That is, they are strictly cooperative situations and represent symbiotic relationship between the two parties (Deutsch, 1949). These situations are unlikely to product interpersonal conflict. An example of zero-difference situation is a soccer team.

Most real-life interpersonal conflicts fall under the third type of interdependence structure: mixed-motive cases (or non-constant sum games). These situations not only induce interpersonal conflict but also implicate intrapersonal conflict of motives. In other words, individual's goal to maximize personal gain by competition is incompatible with mutual or collective interests by cooperation. Payoffs for DMs in mixed motive situations differ from one strategy to another, yet they are neither identical, as in zero-difference situations, nor diametrically opposing, as in zero-sum games.

A two-person mixed-motive situation often simulated in the laboratory is known as the prisoner's dilemma (PD) game. A standard version of PD game involves two prisoners suspected of committing a crime and are placed in solitary confinement. Under interrogation, each prisoner makes an anonymous choice of either defecting (confessing, thereby implicating the other) or cooperating (keeping silent). Each player receives higher payoffs by defecting (i.e., minimizing time in jail), no matter what the other does, but if both defect, the outcome is worse for both than when both cooperate. For a review of research on the two-person PD games, see Pruitt and Kimmel (1997).

1.8.3 Social Dilemmas

The social dilemma paradigm, inspired by the original two-person PD game, offers a compelling means for conceptualizing the inherent conflict of motives between cooperation and competition (Edney, 1980). A social dilemma has three main properties (Dawes, 1980; Liebrand, 1983): (1) members of a group are confronted with a choice between cooperation and defection; (2) from an individual perspective, defection is rational: By choosing the self-maximizing choice, the DM receives a better payoff (e.g., receiving more than one's fair allotment of a shared resource) than for a cooperative choice, regardless of what others do; and (3) the aggregated self-interested decisions can lead to a deficient collective outcome. Real-life instances of social dilemmas are tax compliance, environmental protection, and resource management.

Two common experimental paradigms of social dilemmas are social traps and the public goods problem (also known as the "take-some" and the "give-some" dilemmas, respectively). A public good is a commodity or service (e.g., sewer system, charity, public park) that is freely accessible and non-excludable (i.e., non-paying consumers cannot be excluded from accessing it). In the public goods problem, inspired by Olson (1965), individuals must decide how much they would contribute (e.g., money, effort, tax, or volunteer time) to the resource that is uniformly shared to all members, regardless of their contributions (Barry & Hardin, 1982). Free-riding seems rational, but if many people choose not to contribute, the public good eventually will not have enough resources to operate.

The second class of social dilemmas is social traps (Cross & Guyer, 1980; Messick & Brewer, 1983; Platt, 1973). Within the context of behaviorism, social traps refer to situations in which an immediate small reinforcement (e.g., pleasure or monetary gain) overtime leads to a

large negative outcome (e.g., loss or pain). Several forms of trap can be distinguished. An individual's immediate gratifying behaviour may bring undesired future consequences for oneself (individual trap), for others who do not benefit directly from the reinforcement (externality trap), and for the group as a whole, as a result of aggregated individual gratifying behaviours (collective trap). Examples are obesity caused by overeating (an individual trap) and climate change caused by combustion of fossil fuels (a collective trap) in which the magnitude of cost may be extended to future generations or other countries (a negative externality).

Social traps can be distinguished from the public good problem in terms of how reward and punishment are arranged (Cross & Guyer, 1980; Kollock, 1998). In a social trap, behaviour is immediately reinforcing but yield long-term detrimental consequences, if engaged by enough people. This long-term detrimental impact is much stronger than the short-term gain. In the public good problem, also known as collective fences or countertraps, the sequence for reward and punishment is reversed: contribution produces short-term negative personal outcomes but yields long-term rewards when engaged by enough people.

1.8.4 Commons Dilemmas

Research on two-person PD games has been declining in the recent years. In response to considerable worldwide environmental crisis, much attention has been directed toward a special case of social trap called "replenishable resource traps" (Messick & Brewer, 1983) or commonly known as commons dilemmas (Dawes, 1973; inspired by Lloyd, 1837/1968 and Hardin, 1968). A commons refers to any desirable, publicly accessible resource. Some resources are nonrenewable, such as fossil fuels and endangered species, which cannot be regenerated for sustainable extraction within human time frame. Others are renewable resources, such as forests and fisheries, which are regenerated through naturally occurring processes or biological

reproduction. When a commons is harvested more quickly than it can be regenerated (e.g., water is extracted faster than it can be replenished), the danger of exhaustion arises. The short supply of resource forces individual harvester to confront a dilemma: defection (rapid, short-term, self-interested harvesting at the risk of depleting the resource) or cooperation (slow, restraint, long-term harvesting to preserve the resource). From an individual's perspective, defection is rational. However, if many people engage in unrestricted harvesting, resource destruction is inevitable.

A commons dilemma is best illustrated in Hardin's (1968) influential parable on the tragedy of commons. The commons was originally a public medieval pasture, such as in the heart of old New England villages, where herders can freely use grass to graze their cows. In the absence of regulation, the advantage of individual herders is to maximize wealth by increasing their herd size: The degradation of the pasture by additional cow is small relative to the gain of the herder. However, if all herders make this economically rational decision, the finite commons will ultimately be destroyed by overgrazing in its capacity, resulted in a significant loss for all. This logic is encapsulated as follows: "Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons" (Hardin, 1968, p. 1244). The tragedy of commons may explain a variety of environmental problems, such as global climate change and the loss of biodiversity.

1.8.5 Theories of Cooperation in Commons Dilemmas

The commons dilemma literature has examined a variety of conditions under which individual or group of harvesters tend to exploit or sustain common resources. Prevailing theories focus on a number of biological, motivational, strategic, and structural factors that affect cooperation. In economic game theory, individuals are rational decision makers whose

incentives are to maximize utilities (i.e., economic payoffs). Thus, defection is a dominant strategy that results in a deficient equilibrium (a noncooperation outcome). A different approach is the selfish gene theory (Dawkins, 1976) from an evolutionary perspective. It proposes that individuals pursue an irrational cooperative strategy for the sole purpose of preserving and passing their genes. Another theoretical proposition involves mental model. According to the limited processing theory (Dawes, 1976), people do not always act rationally because they have limited cognitive capacity to process and understand a commons dilemma situation. Thus, they either rely on salient cues to guide their decisions (e.g., their own payoff) or defect without much reflection (Gifford & Hine, 1997).

Psychosocial perspective offers further insights as to why decision makers do not always act rationally to maximize their narrow self-interest. The appropriateness model suggests that individuals confronted a collective issue ask themselves "what does a person like me do in a situation like this?"(March, 1994; Weber, Kopelman, & Messick, 2004). Therefore, instead of evaluating alternatives of expected utilities, decisions are a function of three main factors: the person's identity, situational recognition, and the application of heuristics.

Other psychology theories focus on the motivations and goals with which individuals approach a commons dilemma situation. For example, goal-expectation theory (Pruitt & Kimmel, 1997) assumes that cooperation occurs when two conditions are met: Individual's goal to cooperate and the expectation of others to reciprocate. The interdependence theory also advances a proposition called the transformation principle (Kelley & Thibaut, 1978). Transformation refers to the psychological process that individuals make of an interaction situation based on their broader orientations, such as cooperation or competition. The transformation principle assumes that the presented outcome structure of a *given matrix* is

transformed into the so-called *effective matrix* that represents underlying goals (e.g., emotional reactions, social norms, dispositions) broader than immediate narrow self-interest (Rusbult & Van Lange, 1996). Social value orientation is one dispositional variable on outcome transformation.

Clearly, multiple factors can influence decisions in a commons dilemma (see Hine & Gifford, 1991). The three-factor model (Messick, Wilke, Brewer, Kramer, Zemke, & Lui, 1983) is based on a post-hoc attempt to investigate multiple factors influencing harvest decisions. The model proposes that decision makers have three main (often conflicting) motives: (1) self-interest (i.e., concerns for one's advantage and wellbeing), (2) a desire to use the resource responsibly and efficiently (i.e., to avoid depleting the resource), and (3) a desire to conform to implicit group norms. A number of variables can affect any one of the three motives to be dominant. For example, conformity pressure increases as the range of harvest rates made by others narrows (Samuelson, Messick, Rutte, & Wilke, 1984).

1.8.6 Subtle Situational Influences on Cooperation

Research has demonstrated that cooperative behaviour in social dilemmas can be influenced by subtle interventions, such as framing (e.g., Andreoni, 1995), and subtle situational cues, such as priming (Hertel & Fiedler, 1998; Hertel & Kerr, 2001). In fact, a meta-analysis on cognitive automaticity (Bargh & Ferguson, 2000) revealed that social motivation and interaction can be activated without conscious planning and free will.

Decision framing refers to how particular perspective or preference is automatically elicited by mere selection, formulation, and description of a problem, decisions, or other salient reference points. A fair amount of recent attention has devoted to psychological framing in social dilemmas, including framing acquisitive or supportive aspects of dilemma (Kramer & Brewer,

1984), business versus ethical or social decisions (Liberman, Samuels, & Ross, 2004; Tenbrunsel & Messick, 1999), and public goods versus a commons problem (De Dreu & McCusker, 1997).

The dynamics of priming cooperation are more complex, although some effects are worth mentioning. For example, individuals primed with traits relate to aggression or competition reported lower levels of cooperation (Herr, 1986; Neuberg, 1988). Cultural primes can also influence cooperation. In one study, Chinese-American participants primed with Chinese cultural icons, such as the Chinese dragon, demonstrated more cooperation in the Prisoner's Dilemma game than those primed with American cultural icons, such as Mickey Mouse (Wong & Hong, 2005).

How strong are the effects of priming on cooperation? In one study, participants were assigned the role of fishers in a resource management simulation (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001). Participants who were explicitly instructed to cooperate and participants who were subliminally primed with the goal of cooperation were more likely to leave more fish in a pond in order to replenish the resource (in comparison to the control group). This result is remarkable because both deliberate choice and nonconscious goal activation produced similar effects on subsequent goal-congruent behaviour, suggesting that primed participants were pursuing the same cooperation goal outside their awareness.

Individuals may differ in their susceptibility to priming. In one study, individuals primed with adjectives relate to morality behaved more cooperatively in a social dilemma situation than those who were primed with adjectives related to might (Hertel & Fiedler, 1994). Follow-up studies have replicated these findings while demonstrating that individuals with relatively low consistency in their social value orientations were more susceptible to priming (e.g., Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003). Furthermore, priming individuals with

competence yielded reduced levels of cooperation among competitors but strengthened cooperation among pro-socials (Utz, Ouwerkerk, & Van Lange, 2004).

1.9 Summary of Literature Review

The social value put on luxury has undergone a historical process of "de-moralization" (Berry, 1994). In Western pre-modern era, luxury was considered a threat to civility and Christian virtues, but with the expansion of consumer culture during the 17th century, luxury had transitioned to be associated with convenience, comfort, and economic advantage. Since Plato, the prolonged intellectual debate over luxury has strong implications on the morality of human desire and the fundamental problem of private interests and common goods. The basic controversy is whether selfishness is essentially a sin and a drain on scarce resources that should be restrained and regulated, or an expansive economic force that promotes a sense of liberation, democratization, and egalitarianism. This discourse has registered a powerful ambivalent attitude toward consumption and more generally, the character of modern industrial society at large.

In academic literature, a variety of definitions for luxury has generated a laundry list of attributes, such as high price, quality, exclusivity, superfluity, beauty, and sensuality. Establishing a comprehensive definition of luxury is challenging because the underlying construct is relative, subjective, transient, and multidimensional. However, experiential approaches (e.g., psychology and philosophy) seem to reveal a common theme that luxury is related to personal desire. In particular, luxuries are objects of desire because they fulfill self-directed gratification beyond universal generic need (Berry, 1994).

The notion of personal desire provides the basis for my investigation on the psychological consequences of exposure to luxury. This investigation is inspired by anthropology's study of material culture. Anthropologists examine cultural phenomena, such as

consumption and ritual, by the physical properties, meanings, and uses of material objects featured in their indigenous contexts. Material culture reveals the underlying patterns of how human think, perceive, and feel through their experience of and interaction with objects (Douglas & Isherwood, 1979; Lévi-Strauss, 1963). The intricate fabric of material culture and human experience can be better understood with a complementary strategy. In particular, psychology's priming technique examines the mental processes through which exposure to stimuli activated mental representations and subsequent psychological responding. Thus, the linkage between anthropology's study of material culture and psychology's priming technique offers valuable insights to the investigation on the implicit link of luxury and personal desire.

The question of whether humans are fundamentally self-interested has fostered active research on interpersonal and intergroup behaviour. The assumption of rational self-interest has been extended by social value orientation research, which reveals that in situations of interdependence, people's decision on the distribution of valuable resources between themselves and others is determined by the weights they assign to their own and others' outcomes (e.g., McClintock, Messick, Kuhlman, & Campos, 1973; Messick & McClintock, 1968; Van Lange, 1999).

However, a striking incongruence exists between theoretical conceptualization of SVO as a continuous personality construct and the predominant approach to categorize or dichotomize this construct, despite its apparent disadvantages, such as diminished statistical power (see Cohen, 1983; MacCallum, Zang, Preacher, & Rucker, 2007; Royston, Altman, Sauerbrei, 2006). This practice of dichotomization also restrains another fundamental inquiry about human nature—whether people's concerns for others are malleable and adaptable. By detecting

activation of, and gradual changes in social motivations under different situations and contexts, theories of social decision making can be further enriched.

Many social and environmental problems are essentially collisions between individual self-interest and collective well-being. The commons dilemma paradigm (Dawes, 1973; Lloyd, 1837/1968) suggests that, when an opportunity exists to consume desirable but exhaustible resources, aggregated outcome of individually rational decisions (i.e., noncooperation by rapid, unrestrained harvesting) inevitably leads to resource destruction. Decades of research on social dilemmas has examined explicit interventions or manipulations on cooperation, such as implementing incentives or negative sanctioning system, changing group sizes, facilitating communication, and establishing leadership and privatization.

Recent research has demonstrated that cooperative behaviour may also be influenced by more subtle situational influences (e.g., Herr, 1986; Hertel & Kerr, 2001; Utz, Ouwerkerk, & Van Lange, 1988). Mixed-motive situations, without salient cues to guide behaviour, are by definition relatively unstructured and ambiguous (Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007; see also Snyder and Ickes, 1985). Hence, they are referred to as dilemmas (i.e., two or more motives are in conflict). Situational influences, such as material objects, may aid the disambiguation of a situation by activating relevant mental concepts, defining norms and roles, and behavioural responses associated with those material primes.

1.10 Research Objectives

I see two major gaps in literature on the implicit link of luxury and self-interest. First, a key limitation in research on luxury is the predominant use of self-report measures. A critical question is whether the mere presence of luxury goods, with their strong association to self-directed pleasure, can influence interpersonal behaviour. Second, SVO has been theoretically

conceptualized as a stable personality variable. An important yet under-researched question concerns the role of environmental cues, such as the exposure of material objects, in activating proself or prosocial tendencies.

Inspired by the intellectual connection between psychological mechanisms of priming effects and anthropology's emphasis on material culture, the remainder of the dissertation pursues three main goals. The first goal is to examine the role of implicitly presented objects on social preferences. I suspect that luxury objects, with their intrinsic association to personal desire (e.g., Berry, 1994), may automatically increase cognitive accessibility of concepts related to self-interest and subsequently affect decision making on resource allocation. This is theoretical enriching, because an individual's social preferences, commonly assumed as "stable" dispositions, may actually be richer, more contextualized, complex, and malleable across different situational contexts.

The second goal is to examine the effects of exposure to luxury on cooperative behaviour in a mixed-motive situation. Free-riding in social dilemmas can be attributed to greed (Bruins, Liebrand, & Wilk, 1989). Similarly, acquisitiveness has been defined as the desire to obtain as much of the resource as possible for oneself (Sheldon & McGregor, 2000). This reasoning may explain the implicit link between luxury and self-interest. That is, implicit value and norms communicated by luxuries may activate self-interest, which in turn may cause one to emphasize personal gain over collective welfare. This endeavor may complement an abundant stream of research on explicit interventions on cooperation. It also provides empirical support to the potential of material primes provoking cooperation or competition in a commons dilemma.

The third goal is to examine the effects of exposure to luxury goods on unethical tendencies. In particular, I aim to demonstrate that the activation of personal desire does not

necessarily increase one's tendency to inflict direct harm to others. Indeed, proself orientation should be theoretically distinguished from antisocial orientation (e.g., Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007). Proself orientation involves either enhancement of outcomes for self, with little or no concern for others (individualism) or enhancement of relative outcomes in favor of self (competition). On the other hand, antisocial orientation (aggression) involves minimizing or reducing other's outcome, regardless of outcome to self. Antisocial orientation has received little attention in social dilemmas literature. Thus, I will explore whether exposure to luxury goods activate (a) objectification of social relationships, or (b) personal desire, a sense of longing to satisfy individual wants.

To accomplish these goals, three studies were conducted to investigate the automatic, psychological effects of luxury, thereby using a subtle manipulation, on magnitude of the concerns people have for others (Study 1), on cooperative behaviour in an *N*-person commons dilemma (Study 2), and on unethical decisions and behaviour that may potentially harm others (Study 3). Table 1.2 summarizes research questions and their general hypothesis.

Table 1.2
Summary of Research Questions and Predictions

Study	Questions	General Predictions
1	Does the mere exposure to luxury goods influence individual preferences for particular distribution of outcomes between self and others?	Mere exposure to luxury goods is expected to increase the propensity to place more weight on one's outcome relative to that of the other in a series of own-other outcome distributions options.
2	Does the mere exposure to luxury goods influence harvesting behaviour in an N-person commons dilemma situation?	Mere exposure to luxury goods is expected to increase one's propensity to harvest toward a maximum personal outcome, away from cooperation by demonstrating less restraint and efficiency.
3 (Exploratory)	Does the mere exposure to luxury goods increase unethical tendency?	

CHAPTER 2

Study 1: The Influence of Luxury on Social Motivation

The objective of this study is twofold. The first is to investigate whether social value orientations are reactive to implicit situational influences—in particular, the mere presence of luxuries. The second objective is to assess whether a seemingly chance exposure to luxury would increase one's propensity to focus on personal payoff relative to that of another person, that is, the magnitude of concern people have for others. The objectives were accomplished by employing two decision-making tasks: a series of one-shot decomposed games, using the SVO Slider Measure (Murphy, Ackermann, & Handgraaf, 2011), and a modified Dictator Game (see Hoffman, McCabe, Shachat, & Smith, 1994).

In behavioural economics, one important vehicle for investigating social preferences is a class of experimental paradigm called Dictator Games (Eckel & Grossman, 1996; Hoffman, McCabe & Smith, 1996; Kahneman, Knetsch, & Thaler, 1986). In a standard procedure, a participant plays the role of an allocator (dictator) and decides to allocate any desired amount of a fixed endowment to self and the recipient (an anonymous person). According to the standard economic theory, an allocator's decisions are governed by self-interest: The dictator should take all the money for himself, leaving nothing for the recipient. However, laboratory findings from dictator games reveal that most participants deviate from rational choice to varying degrees (Camerer, 2003).

2.1 Hypothesis

Hypothesis 1: Mere exposure to luxury will increase the propensity of concern for oneself relative to the other.

(a) Mere exposure to luxury will increase the tendency to place more weight on one's outcome relative to that of the other in a series of own-other outcome distributions options in a decomposed game.

(b) Mere exposure to luxury will increase the tendency to give less of an endowment to the other in a modified dictator game.

2.2 Methodology

2.2.1 Overview

The experimental design induces one between-participant factor: primes (luxury versus non-luxury related images). Two dependent variables were assessed: social motivation and the amount of monetary division between participants and another person. The first dependent variable is the magnitude of concern participants have for others (social motivation), reflected in their choices in a series of own-other resource distribution options. Social motivations would be revealed by the SVO Slider Measure constructed by Murphy, Ackermann, and Handgraaf (2011). The second dependent variable is how much of a fixed amount of money is divided between oneself and the anonymous recipient in a modified dictator game.

2.2.2 Participants and Design

Fifty-four undergraduate students (19 males, 35 females) from a mid-sized Canadian university participated in the study. They were recruited from the psychology research participation pool and received extra credit for their participation. Ages ranged from 18 to 30 (*Mdn* = 19), and participants represented a variety of ethnicities, including African (3.6%), Asian

(12.7%), Caucasian (76.4%), Middle Eastern (1.8%), and other (3.6%). The majority of participants were enrolled in the faculty of Social Science (56%) and Science (20%). Participants were required to be fluent in English language and have normal or corrected vision.

2.2.3 Procedures and Materials

Participants in groups of six were scheduled on the half hour and attended a questionnaire session run by a trained research assistant. Participants took part in two allegedly separate experiments: The first, called "common associations," would require each participant to provide ''individual data,'' and the second, called "decision making," would require each participant, who had been randomly assigned to pair with another anonymous participant in another room, to yield "combined data." All measures were presented in a single questionnaire packet. Participants were requested to perform a sequence of three tasks: (1) the "common associations" task that involves priming; (2) the SVO Slider Measure, and (3) the modified dictator game. To control for potential order effects, the slider measure and the dictator game were counterbalanced. To ensure that participants believed that the two tasks were unrelated, they were told that the first experiment is a pilot study on "memory representations" that involves validation of a new scale.

2.2.3.1 Priming task. In the first task, "common associations," participants were randomly assigned to one of two experimental conditions, in which they viewed either luxury or non-luxury images. The images were chosen to closely follow Berry's (1994) four dimensions of universal needs (sustenance, shelter, clothing, and entertainment), in which luxury represents the highest level of refinement and pleasure in fulfilling these needs. I included another category of basic needs—transportation. For each image, participants were asked to generate as many words as possible within 30 seconds (see sample luxury and non-luxury primes in Appendix A). This

task allowed manipulation and pretesting of the primes (i.e., to ensure that most participants considered the presented images as luxurious or not luxurious by the descriptors they generated).

2.2.3.2 The SVO Slider measure. Social motivations were measured using the paper-based slider measure (the SVO Slider Measure; Murphy, Ackermann, & Handgraaf, 2011). This measure was selected because it yields individual scores at a ratio level. The slider measure has been shown to be a more reliable, valid, and efficient tool for measuring social preferences than the Triple Dominance Measure and the Ring Measure (for detailed psychometric properties, see Murphy et al., 2011).

The SVO Slider Measure consists of six primary items (see Appendix B). Each item presents a continuum of "own-other" payoff allocation over 9 options. Participants evaluated each pair of allocation outcomes and register their choices by circling the most preferred one. Participants were informed that the total payoffs they received were determined by all 6 decisions they made and by all 6 decisions made by their partners. Each of the 6 items correspond to one of the six lines interconnecting the coordinates of four basic categories (altruistic, pro-social, individualistic, and competitive) in the Griesigner and Livingston's (1973) SVO geometric framework (see figure 2.1).

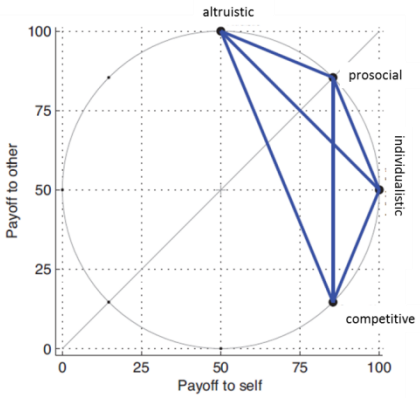

Figure 2.1. This figure shows that the endpoints of each item in the Slider Measure was derived from the coordinates connecting one of the six lines in the self/other allocation plane.

Social motivations can be assessed by a unidimensional continuous measure of angular degrees, measured from the abscissa (the horizontal coordinate of a point) to the motivational vector, with the range between 61.39° (representing prototypical altruism) and -16.26° (representing prototypical competiveness). An SVO angle of 0° indicates perfect individualism (i.e., wholly indifferent to the payoff of another person). Therefore, higher angular degrees indicate greater tendency to be prosocial (i.e., greater concern for the welfare of the other), whereas negative scores indicate greater tendency to be competitive (i.e., negative concern for the welfare of the other). The procedure to convert a participant's preferred payoff allocation to its corresponding angle is as follows (see figure 2.2). Fifty is subtracted from both the mean allocation for self ($\bar{A}_{\mathrm{p}} - 50$) and the mean allocation for the other ($\bar{A}_{\mathrm{o}} - 50$). The inverse tangent of the ratio between these two differences is computed for a single index of SVO. For detailed instructions on SVO angle calculation, see Appendix C.

$$\mathrm{SVO}^{\circ} = \arctan\left(\frac{(\bar{A}_{\mathrm{o}} - 50)}{(\bar{A}_{\mathrm{p}} - 50)}\right)$$

Figure 2.2. The formula for SVO angle, where $\bar{A}_p$ is the mean payoff allocated to the self and $\bar{A}_o$ is the mean payoff allocated to the other. Source: Murphy, Ackermann, & Handgraaf, 2011.

A standard classification procedure is also conducted to categorize participants' decisions into one of the four SVO prototypes. Participants with a vector greater than 57.15° would be categorized as "altruists" (i.e., maximization of other's payoff); with a vector between 22.45° and 57.15° would be categorized as "prosocials" (i.e., maximization of the sum of own and other's payoff); with a vector between -12.04° and 22.45° would be categorized as "individualists"; and with a vector less than -12.04° would be categorized as "competitive" (i.e., maximization of the difference between own and other's payoff).

The SVO Slider Measure was introduced with the following instructions adapted from Murphy, Ackermann, and Handgraaf (2011): "*In this task you have been paired with another*

participant in the other room, whom we will refer to simply as the "Other." The other is someone you do not know and will remain mutually anonymous. You will be making a series of decisions about allocating resources between you and the other. Every point has value: the more points you receive, the better for you, and the more points the other receives, the better for the other. Your own choices will produce points for both yourself and the other person. Likewise, the other's choice will produce points form him/her and for you. Therefore, the TOTAL number of points you receive depends on your own choice and the other's choice as well. Similarly, the other's TOTAL points depends on his/her choices and your choices as well. Before you begin, please keep in mind that there are no right or wrong answers - for each question choose the option that you prefer most."

Anonymity was established by informing participants that the choices made by the anonymous other would be kept confidential. Participants were informed that they would never meet or interact with the anonymous other. This instruction ensures that participants' choices reflected their personal preferences for outcome distributions, eliminating any potential influences from the other (e.g., reciprocity, fear of retaliation).

Several steps were taken to ensure that participants believed the existence of another randomly paired participant. First, on the sign-up software, two different laboratory locations were posted. Second, one day before the experiment, participants received an email that notifies them the locations of the two laboratory rooms. Finally, directions to the two rooms were posted in the hallways.

2.2.3.3 A Modified Dictator game

A modified, one-shot dictator game was designed to investigate self-interested behaviour. The choices in the dictator game were made incentive compatible by means of a lottery with a 50

dollar cash prize. Participants were informed that they had been randomly assigned the role of "a proposer" who would determine how to allocate the 50 dollars between themselves and a randomly paired anonymous participant (a responder) in another room. For each experimental session, one participant was randomly selected as a winner whose allocation decision would be implemented. Participants were informed that the task is not a game, but simply a measure of their individual distributional preferences. If the situation was approached as a "game," dictators would be motivated to keep as much as possible in comparison to the other person (i.e., strategies for "winning").

To allow free expression of self-interest, privacy and anonymity must be established to eliminate any extraneous variables on outcome behaviour (e.g., demand characteristics, conforming to norms of fairness and unselfishness). Participants received a numbered envelope contained two chits. One chit identifies the number of that envelope and the other chit requests dictator decisions with the following instructions: "Please decide how to allocate the $50 real cash prize to yourself and the other person. You can allocate any amount from $0 to $50 to the other person." Participants were reminded that there was a real chance that their choices would have a pecuniary effect upon themselves and some other person if they happened to be selected by lottery. After making a decision regarding how much money to allocate in a private booth, participants kept the numbered chit, sealed their decisions in the envelope, and deposited the envelope in a black box in the room.

Notably, "dictator game" and "decomposed game" are often used interchangeably in literature, presumably because a decomposed game has developed to comprise any decision-making tasks where a DM makes a unilateral choice among different allocations of resource for the self and another person. Note that a situation would constitute a proper game if payoff

outcomes are influenced by strategic, interdependent decisions of two or more DMs. The distinctions between the two decision-making tasks (the decomposed game and the modified dictator game are twofold (Brosig, 2002). First, they measure different types of other-regarding behaviour. In a decomposed game, other-regarding behaviour concerns the realization of mutual benefits or an efficiency gain (i.e., every resource is optimally allocated to each person) because DMs are presented with the opportunity to maximize the joint payoff. In a dictator game, other-regarding behaviour is aimed at fair distribution outcomes, because a DM decides how much to divide a fixed amount of endowment (a constant sum) between themselves and the recipient. Second, the two decision-making tasks differ with regard to their interdependency of decisions. Although strategic and interpersonal considerations are eliminated in both tasks, the total payoffs in the decomposed game are contingent to both players, whereas the final outcomes in the modified dictator game are solely determined by dictators.

2.2.3.4 Post-study debriefing questionnaire. Upon completion of the experiment, a post-study questionnaire was administered to provide opportunities for participants to disclose any thoughts about their experiences with the experiment. Two items were administered to assess the extent to which participants complied with the instructions: (1) I feel that the instructions were clear enough for me to understand what I was being asked to do, and (2) I trusted that the experiment was being conducted in the way that it was described to me. Participants rated their degree of agreement with each statement on a 7-point Likert scale (1 = "not at all," 9 = "to a great extent"). In addition, to explore any strategies or motivations that may guide allocation decisions, participants responded to three open-ended questions: (1) Please tell us why you made the decision you did about allocating points. (2) Please tell us why you made the decision you did about what you put in the envelope. (3) Please write in any other comment you might like to

make about the study (e.g., procedures, the other paired participant, etc.). Finally, participants were fully debriefed and compensated for their time with course credits. Participants randomly selected by lottery (with their identifying chit) were paid privately in 50 dollars cash within a week of their participation.

2.3 Results

2.3.1 Manipulation Check

2.3.1.1 Instructional manipulation check. To ensure that participants understood, trusted, and complied with the experimental instructions of the tasks, two post-study items were examined. Descriptive statistics provide support for participant' adherence to the instruction (M = 6.16, SD = 0.93) and trust to the experimental setup (M = 5.44, SD = 1.79). Data from one participant who responded to 1 on both items were discarded from analysis. For the written comments, data were discarded if participants indicated doubts on the existence of another paired participant, the awareness of the study's true purposes, and the association between the priming procedure and the allocation decision tasks. Based on these selection criteria, 2 participants were excluded.

2.3.1.2 Manipulation check on primes. To ensure that each image was appropriately categorized in either luxury or non-luxury condition, two independent judges blind to condition rated its perceived luxuriousness on a 7-point scale (1 = not at all luxurious to 7 = very luxurious). The two judges were psychology undergraduate research assistants blind to the study's purposes and hypotheses in order to ensure that the judgments would be guided by the primes rather than by their pre-existing expectations. The inter-judge reliability was high (α = .92). As expected, the images in the luxury condition (M = 6.50) were regarded as more luxurious than those in the non-luxury condition (M = 2.63).

To further examine whether the priming manipulation was effectively executed, a third judge blind to participant group assignment read the words generated by participants and made a judgment as to which condition they were assigned. Nearly all written responses were correctly assigned to condition (89% compared to 6% incorrectly assigned and 9% not classifiable). Therefore, the judge's assessment of the written content suggests that the manipulation of primes was successful.

2.3.1.3 Linguistic analysis of responses to primes. To explore how the responses to the luxury images differed from the non-luxury images, a word cloud was created by Wordle (2012) to analyze their linguistic patterns. A word cloud scales word size by frequency and provides a visually compelling representation of the relative prominence of terms. After a standard cleaning practice of removing common English words (articles and prepositions) and common nouns (e.g., "shoes" and "bed"), only adjectives and attributive nouns (e.g., "paradise" and "heaven") were retained.[11] The word clouds for luxury and non-luxury primes are presented in Figure 2.3. They appear to have clear distinctions: Language used by participants exposed to luxury prominently features words such as "expensive," "rich," and "fancy." Therefore, descriptors generated by participants were consistent with the primes.

2.3.1.4 Counterbalancing. To control for serial order carryover effects on the dependent variables, the order of the decomposed game and the dictator game were counterbalanced across sessions. When the dictator game was presented first, participants scored lower on SVO angles (M = 31.30, SD = 7.27) and allocated less amounts of money to recipients (M = 19.07, SD = 8.09) than when the decomposed game was presented first [SVO angle (M = 35.18, SD = 6.85);

[1] Adjectives that function as nouns and nouns that function as adjectives were both included for analysis. For example, "rich" is an adjective that serves as a noun, as in "the rich are privileged." On the other hand, "silk" is a noun that serves as an adjective, as in "she wears a silk dress." Common nouns that have distinctive luxury or non-luxury characteristics (e.g., "mansion" and "hut") were also included.

Money to recipient, (M = 19.63, SD = 7.59)]. Noting this difference, two independent *t*-tests, conducted separately for both luxury and non-luxury conditions, revealed no significant order effects on the two dependent variables, all p's > .05.

Figure 2.3. Word clouds for words generated in luxury and non-luxury conditions. Font size indicates relative frequency of usage.

2.3.2 Descriptive Statistics

The presence of outliers was examined using boxplots for the two dependent variables. The boxplot for dictator giving revealed one extreme score of $0 in the non-luxury condition. To lessen the effect of this outlier, this value was winsorized by replacing it by the fifth percentile (Field, 2005).

Participants' scores on the decomposed game were first reduced to the categorical level (altruistic, prosocial, individualistic, or competitive) using the standard classification scheme outlined in Appendix C. The number of participants who were classified as prosocials, individualistic, and competitive are shown in Table 2.1. Categorical results from the decomposed game revealed that most participants (85%) exposed to luxury primes and all participants exposed to non-luxury primes were categorized as exhibiting prosocial motivation (i.e., had SVO angles between 22.45° and 57.15°). Only four participants (5%) exposed to luxury primes were categorized as exhibiting individualistic tendency (i.e., had SVO angles between 12.04° and 22.45°). This finding suggests that, when participant' allocation decisions were reduced to categorical output, a clear majority type, namely prosocial, occurred 93% of the time.

Table 2.1
SVO Types by Experimental Condition (N = 54)

		Prosocial		Individualistic		Competitive	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
SVO	Luxury (*n* = 27)	23	85.19	4	14.81	0	0
	Non-Luxury (*n* = 27)	27	100.00	0	0	0	0
Money	Luxury	17	62.96	5	18.52	5	18.52
to other	Non-luxury	26	96.30	1	0	0	0

To examine allocation decisions in the dictator game, the same classification procedure was employed by converting dictators' decisions into SVO angles.[1] For example, participants would be classified as "prosocials" if they distributed a fair split of $25 to themselves and the recipient because this payoff allocation is equivalent to a motivational vector of 22.5° in the Cartesian SVO framework. Decisions made by dictators were predominately prosocial (79.63%). However, participants exposed to luxury primes exhibited greater variability in their social motivation types: 17 participants (63.0%) were labeled as prosocials, 5 participants as individualistic (18.5%), and the remaining 5 participants (18.5%) as competitive. A chi-square test of independence indicated that decisions made in both the decomposed game and the dictator game were related, $\chi^2(1) = 10.11$, $p < .01$, Cramér's $V = .43$. Overall, decisions made in the dictator game were less prosocial than decisions made in the decomposed game.

Although the classification procedure facilitates a direct comparison of the results, a continuous scale is recommended for data analysis (e.g., Austin & Brunner, 2004; Cohen, 1983). As mentioned, a continuous scale is consistent with the theoretical conceptualization of social motivation and does not necessarily sacrifice statistical power, undermining evidence for the extent of variation in outcomes between groups. Thus, to investigate *how much* participants were willing to sacrifice in resource allocation, social preferences were measured at the ratio level for subsequent analysis.

Means, standard deviations, and ranges were computed for the two main dependent variables: SVO angles and money to other. Descriptive statistics can be seen in Table 2.2. Overall, the average amount of money allocated to recipients in the dictator game (M = 19.36,

[1] The utility function (Wyer, 1969; Griesinger and Livingston, 1973) was used to convert dictators' decisions (i.e., the amount of money allocated to recipients) into SVO angles. The utility function is expressed by $\theta i = \tan\text{-}1 \frac{m_{yi}}{m_{xi}}$ and specifies the *i*th participant's social motivation, as characterized by the angle θi measured from the abscissa to the motivational vector (m_{xi}, m_{yi}), where m_{xi} is the importance given to own payoff and m_{yi} is the importance given to the other's payoff.

SD = 1.06) was slightly below the fair share of 25 dollars, suggesting a trend toward self-interested giving. On average, the choices made by the participants in the decomposed game yielded a prosocial tendency, characterized by a motivational vector of 33.24° that approximates perfect prosociality (of 45°).

Participants exposed to luxury primes exhibited lower SVO angles, *M* = 30.43, SD = 8.22, than participants exposed to non-luxury primes, *M* = 36.03, *SD* = 4.85, with a statistically significant mean difference between the two conditions, *M* = 5.63, 95% CI [1.92, 9.34], *t*(42.143) = 3.065, p = .004, *d* = 0.94. Further, participants exposed to luxury primes also gave less money to the recipient, *M* = 16.67, *SD* = 1.85, than those exposed to non-luxury prims, *M* = 22.04, *SD* = 0.77, with a statistically significant mean difference of 5.37, 95% CI [1.31, 9.44], *t*(34.69) = -2.68, *p* = .011, *d* = 0.91.

Table 2.2
Means and Standard Deviations of SVO angle and Money to Other for Each Condition

	Condition	*N*	*M*	*SD*	Min	Max
SVO angle	Luxury	27	30.43	8.22	13.82	45.00
	Non-luxury	27	36.06	4.85	24.96	45.00
	Total	54	33.24	7.26	13.82	45.00
Money to other	Luxury	27	16.67	1.85	0	30
	Non-luxury	27	22.04	0.77	15	25
	Total	54	19.35	1.06	0	30

To examine whether a relationship existed between the two allocation decision tasks, a Pearson product-moment correlation coefficient was computed. Results indicated a moderate positive correlation between the vectors in the decomposed games and the amounts of money given to other in the dictator game, *r*(54) = .31, *p* = .023, with SVO explaining 10% of the variation in the amount of money allocated to other.

Demographic variables (gender, ethnicity, faculty, and year of academic study) were not found to be correlated with the dependent variables, with the exception of age. Specifically, older participants allocated more money to the recipient in the dictator game (r = .57, p < .001), but age was not correlated with SVO angles, p > .05.

2.3.3 Hypothesis Testing

The hypothesis that exposure to luxury would decrease prosocial tendency and dictator giving was assessed using multivariate analyses of variance (MANOVA). Prior to hypothesis testing, the data were examined to assess whether they met assumptions for this type of analyses. First, the Kolmogorov-Smirnov test was conducted to examine whether the distribution of scores was significantly different from a normal distribution. The results indicated that the SVO angle, $D(54) = 0.25$, $p < .05$, and the amount of money given to other (LottOther), $D(54) = 0.27$, $p < .05$, were both non-normal.

Second, Levene's test was conducted to test the assumption of variance homogeneity. The results indicated that the assumption of homogeneity of variance was violated ($p < .05$). As an alternative to the standard ANOVA F-test, Welch-modified k-sample ANOVA was recommended for interpretation because it only incurs a small loss in power when the variances are equal (Gastwirth, Gel, & Miao, 2009; Welch, 1951) and is appropriate for small number of factor levels (Rasch, Kubinger, & Moder, 2011). The Welch's ANOVA indicated a significant difference among participants of the two groups in their SVO angles, $F(1, 42.14) = 9.39$, and money given to other, $F(1, 34.69) = 7.20$ (both ps < .05).

Numerous studies have demonstrated that with balanced designs, the ANOVA F-test is highly robust (insensitive) to the effects of non-normality and variance heterogeneity on the Type I error rates and power (Boneau, 1960; Box, 1954; Glass & Stanley, 1970; Lindquist, 1953;

for review, see Glass and Stanley, 1970 and Glass, Peckham, and Sander, 1972). For this reason, the standard ANOVA F-test was conducted for subsequent analysis.

A MANOVA was performed with primes (luxury versus non-luxury images) as independent variable, and SVO angle and money given to other (LottOther) as dependent variables. Using Wilks's lambda, the multivariate result indicated a significant effect of primes on SVO and LottOther, $\Lambda = 0.79$, $F(2, 51) =$, $p < .05$. Separate univariate ANOVAs revealed significant effects of primes on SVO angles, $F(1, 52) = 9.39$, $p < .05$, partial $\eta^2 = .16$, and LottOther, $F(1, 52) = 7.20$, $p < .05$, partial $\eta^2 = .12$. The Kruskal-Wallis test, a nonparametric statistic, confirmed the findings of the MANOVA: Primes affected SVO angles $H(1) = 6.98$, $p < .01$ and LottOther, $H(1) = 3.75$, $p = .05$. Thus, the hypothesis was confirmed.

2.4 Discussion

The present study investigated the impacts of luxury on social motivations. Specifically, it examined whether exposure to luxury would increase the weight people attach to their payoff relative to the other's payoff in two resource-allocation tasks: the decomposed game and the modified dictator game. Both tasks assess the magnitude of concern people have for others, although they are fundamentally different in some aspects. Participants exposed to luxury were found to demonstrate less giving when "dictating" division of a fixed monetary sum, and to exhibit greater motivation to maximize their own gains when presented with options containing different distributions of own-other outcomes.

The present study contributes to knowledge about social motivations on two fronts. First, it provides preliminary evidence that luxury induces self-interested choice behaviour. Second, it demonstrates that subtle cues, particularly the mere presence of luxury, can activate changes in

one's social value orientation, which is typically theorized as a stable individual difference construct.

2.4.1 The Two Types of Other-Regarding Behaviour

As mentioned, the decomposed game and the modified dictator game in the present study assess two different types of other-regarding behaviour. Preferences for joint gain maximization (cooperative motivation) were measured by the decomposed game, whereas preferences for minimal differences between outcomes to self and the other (fairness or equality) were measured by the modified dictator game. The present results suggest that allocation decisions made in the decomposed game were related to the amount of money given to recipients in the modified dictator game.

This relationship between the two tasks provides some insights into the underlying nature of prosocial motivation. Both concerns for joint outcomes and concerns for equality are potentially rooted in one's positive consideration for other's welfare. In fact, emotional responding is an important determinant of prosocial behaviour (Baston, 1991, Eisenberg, 1986). In the absence of potential repercussions, a prosocial individual, when making allocation decisions that will influence payoff for the other, may experience empathy for the other person who cannot do anything to affect the outcomes. Empathy is an affective response that arises from the apprehension of another's emotional state or condition (Batson & Coke, 1981). Empathy may elicit feelings of compassion, sympathy, and other vicariously-induced reactions. Thus, empathy may prevent individuals to defect, leading to either fair allocation or joint-maximization decisions.

Notably, empathic emotion plays a crucial role in both prosocial and altruistic motivations. However, the two motivations differ in the degree of concern a DM has for the

outcomes for self and the other. An individual with prosocial motivation cares about both her and the other person's welfare, whereas an individual with altruistic motivation cares about maximizing the other's payoff, indifferent to own payoff. Hence, this difference underscores the theoretical conceptualization of SVO, that is, the extent to which a DM is willing to sacrifice her own resource to assist another person.

2.4.2 The Effects of Luxury on Social Motivations

The first hypothesis, that exposure to luxury would yield lower angular degrees in the decomposed game, indicating less concern for the welfare of others, was supported. The second hypothesis, that individuals exposed to luxury would give less money to the anonymous recipient in the modified dictator game, was also supported. These findings suggest that exposure to luxury primes increases the tendency for individuals to attach more weight on their own welfare in relation to the welfare of others.

Interestingly, participants made more self-interested allocation decisions in the modified dictator game than in the decomposed game. In the modified game, luxury-primed participants made more decisions that were typically classified as "individualistic" (i.e., maximization of own payoff) and "competitive" (i.e., maximization of the difference between own and other's payoff) than in the decomposed game. Why are luxury primed individuals more self-interested in the dictator game than in the decomposed game? One possible explanation pertains to the nature of dictator giving. In a dictator game, the "dictator" was given a fixed amount of endowment, which she then decides how much to transfer to the recipient. In the absence of the opportunity to maximize joint payoffs, any amount of money transfer to the recipient is considered a "gift" to the anonymous "beneficiary." Thus, giving may represent an act of kindness motivated by a sense of generosity, moral obligation, or pleasure associated with helping. This "unconditional"

positive giving in dictator game has been widely interpreted as evidence of altruism (Andreoni, Harbaugh, Vesterlund, 2008, Camerer, 2003). Thus, if exposure to luxury led to heightened focus on one's welfare, motivation to give to others may be dampened.

Another potential explanation is that the SVO Slider Measure presents both opportunities for cooperation (i.e., maximizing joint payoffs) and distributional fairness (i.e., minimizing inequality in payoffs), whereas the dictator game only provides the latter. DMs who endeavor to maximize collective gain (and are inequality tolerant) could potentially receive higher earnings than DMs who are only concerned about equality in outcomes (egalitarianism). Thus, individuals exposed to luxury could appear as cooperative (i.e., to realize a mutual benefit), if doing so would secure a maximal resource for themselves.

2.4.3 Measurements of Social Motivation

As previously mentioned, social value orientation is theorized as a continuous construct, yet the typical practice is to assess it as a categorical or even dichotomized variable (typically prosocial and individualistic). The present results revealed that participants were predominantly categorized as prosocial type, yet the continuous output measurement revealed substantial variance of SVO angles within the boundaries of the prosocial type, as well as differences in SVO angles by experimental priming conditions, capturing rich information beyond what nominal category could demonstrate. It would appear odd, for example, to place people into one of a finite number of pigeonholes based on intelligence and, in support of stereotypical ideologies, label them as either "smart," "average," and "dumb."

On a related note, one may raise the concern with my uncommon practice of using SVO as a dependent variable[1], as they are generally interpreted as stable distributive preferences,

[1] One exception is the study conducted by Sonnemans, van Dijk, and van Winden (2002), who tested social value orientations with a Circle test before and after a 25-round public goods game.

assumed to be consistent overtime and generalized across situations, and are often treated as a personality influence on various interdependent outcomes, such as cooperation in social dilemmas. However, remarkable in my study is that social preferences can be induced by subtle, implicit messages. In short, categorical data severely limits theoretical understanding of basic social tendencies.

2.4.4 Limitations

The present study has some potential weaknesses, each of which leads naturally to future research opportunities. First, although the experimental design and results allow robust inferences about the causal nature of the luxury and self-interest, the study did not examine its underlying psychological mechanism. Although personal desire is a reasonable explanation, future research should validate this by examining whether the effects are mediated by spontaneous increase in self-focused gratification tendencies.

Second, the study did not differentiate joint maximization from equality maximization in the decomposed game. Although Van Lange (1999) demonstrated that, among individual with prosocial orientation, the desire to maximize shared benefits and to minimize inequality were positively correlated, other studies provide conflicting evidence that equality appears to be the dominant motive among prosocials (e.g., Eek & Garling, 2006). Thus, future work would be useful to discriminate concern for joint outcomes from concern for quality and to examine the effects of luxury on these motivations.

Third, the dictator game is an uncommon experience where individuals have the power to impose allocation decisions on others. This raises concern for social desirability, as participants were being evaluated in an artificial laboratory setting. I do not believe that evaluation anxiety would affect the validity of experimental findings. The dictator experiment was carefully

designed to secure conditions of privacy and anonymity. Participants were also reminded that they would not expect to contact nor meet the recipient.

2.4.5 Future Directions

The work undertaken in this study presents several areas for further development. One opportunity for future research could examine personal disposition that is most susceptible to the effects of luxury. This would contribute to Disposition × Situation perspective on social behaviour. In other words, how contextual influences may enhance or attenuate the relationship between social preferences and some outcome behaviours deserves empirical attention. For example, Hertel and Fiedler (1998) demonstrated that only participants with an unstable social value orientation were most likely to be influenced by primes. Similarly, Smeesters et al. (2003) found that low consistent pro-self individuals were more likely to assimilate their behaviour toward the primes.

Another area of interest would be to investigate the influence of affect. In one study (Tan & Forgas, 2010), positive mood led participants to focus on internal states, which heightened pro-self-tendencies and prompted selfish allocation strategy in a dictator game, whereas negative mood led to an external focus, which produced more cautious, fair allocation outcomes. I speculate that luxury's intrinsic association to pleasure and indulgence could potentially trigger positive emotion which in turn, activates internal selfish impulses against the external social norms of fairness.

2.4.6 Conclusion

With the world's growing wealth and increasing interests and popularity in luxuries, it is rather surprising that the psychological effects of luxury have received little empirical attention. This study is a first step toward understanding the psychological effects of luxury on self-

interested choice behaviour. I employed two resource allocation decision tasks: a decomposed game, which measures social motives, an important psychological construct, and the modified decomposed game, which represents minimalist measure of selfishness typically used to test traditional economic theories. Both measures are independent of strategic considerations, reputational gain, or pressure to conform to social norms such as fairness. Social preferences in this austere context not only reveal how much a DM cares about own versus other's material wellbeing, but can also affect behaviours in situations of interdependence (Kelley & Thibaut, 1978). The present findings also have important implications for organizations, institutions, and other everyday situations where a decision made by one person has indisputable consequences for others. Thus, the present study offers immediately accessible avenues for future studies and presents a useful starting point for this dissertation to further examine the implicit association of luxury and self-interest.

CHAPTER 3

Study 2: The Influence of Luxury Objects on Cooperative Behaviour

The objective of study 2 is to test the idea that the mere exposure to luxury goods not only increases DMs' propensity to prioritize self-interests, but also influences their cooperative behaviour in social dilemmas. That is, I aim to investigate whether the effects of luxury generalize beyond a two-person one-shot decomposed situation to an *N*-person multi-stage mixed-motive situation. Study 2 pursues this conjecture by utilizing the commons dilemma paradigm. To recapitulate, a commons dilemma occurs when deciding how much to harvest from a common, limited, replenishable resource pool, individuals' short-term self-interests (to maximize own profit) are in conflict with long-term collective interest (to preserve the commons). Unlike a decomposed game, a commons dilemma involves dynamic decision-making over a series of trials (i.e., iterated). Therefore, commons dilemmas are characterized by a feedback relation between the system (e.g., fishery) and participants: The current state of the resource pool influences harvest decisions and is influenced by autonomous system factors (e.g., regeneration rate) and consequences of actions made on it (Brehmer, 1992; Gonzalez, Vanyukov, & Martin, 2005).

3.1 Hypotheses

Hypothesis 1: Mere exposure to luxury goods would increase one's propensity to harvest toward a maximum personal outcome, away from cooperation by demonstrating less individual harvest restraint.

Hypothesis 2: As an exploratory hypothesis, lower levels of cooperation would be associated with stronger perceived barriers to cooperation.

3.2 Methodology

3.2.1 Design and Participants

The experimental design included one between-participants factor: primes (luxury versus non-luxury object images). The dependent variable involves participants' harvesting behaviour in a commons dilemma. Objective measurements of cooperation were obtained by FISH 4 (Gifford & Gifford, 2000)--a microworld environment that simulates a fish-stock in which individual resource management decisions and practices can be assessed.

A pilot study of 8 participants (4 in each experimental condition) was conducted to ensure the feasibility of the study. When no issues related to participants' understanding of the experimental instructions, descriptions, and procedures arose, the larger-scale study was launched. Participants were 77 undergraduate students from a mid-sized Canadian university (24 male, 51 female, two unspecified), recruited via the psychology research participation pool. Participants received course credit for their participation and were paid based on the size of their harvests.

Participants' ages ranged from 17 to 44 years (*Mdn* = 21). Most participants (81.3%) were in their first, second, and third academic year of study and were enrolled in the faculty of social science (51.9%). Participants identified themselves as a variety of ethnicities, including Caucasian (38.7%), Asian (22.8%), Middle Eastern (7.6%), African (5.4%), East Indian (3.3%), and other ethnicities (2.2%). Two participants did not complete their demographic information but their data for the simulation were retained for analysis.

3.2.2 Setting and Procedure

The study was conducted in a university computer laboratory equipped with 23 computer workstations facing the projector at the front (4 computers on the left side of the room, 4

computers on the right side of the room, 5 computers at the back of the room, and 2 rows of 5 computers in the middle of the room). Participants arrived in groups of 4 to 7, and were seated at individual computers on the raised platform (the left, right, and back side of the room) separated by at least one unused workstation, making their computer screen not visible to other participants.

Participants were informed that they would take part in two unrelated experiments. The first experiment, "Product Decisions," involved validation of a new marketing scale by requesting that participants evaluate various consumer products. The second experiment, "Resource Management," involved operation of a shared virtual fishery with three other participants.

In the first task, participants were randomly assigned to be exposed to several images of luxury (e.g., a Rolex watch) or non-luxury (e.g., a Casio watch) consumer products. For each product, participants described its key features and rated its quality. In the second task, participants were told that they were randomly assigned to a group with three other anonymous participants to manage a virtual fishery (i.e., participants and the three anonymous others would see the same ocean). To ensure anonymity, participants were informed that the three others would be fishing in separate lab rooms. Unknown to the participants, the three "other fishers" were computer-generated fishers programmed to harvest at three levels of greediness: competitive, neutral, and cooperative. This deception was necessary to enhance realism and experimental control. Realism was achieved because participants were led to assume that they were fishing with real people. Experimental control was established because every participant was confronted with the same range of behaviors.

The instructions for the resource management task are as follow: "*In this exercise, you will engage in a microworld with three other participants. The microworld is a computer simulation of fishery. You will be fishing in an ocean with three other participants. This means that you and the three other participants will see the same ocean. You can make money fishing. You will be paid 10 cents for each fish you catch. The total amount you earn will be paid by cash by the end of the experiment. You may catch as many fish as you like."*

To ensure that participants believed they were fishing with real participants, four laboratory locations were posted on the sign-up software and directions to them were posted in hallways. Upon completion of both tasks, participants were given a post-study questionnaire which provides opportunity to disclose any suspicions of the experimental procedures. Participants also completed the Psychological Barriers to Cooperation Scale (Chen & Gifford, in press), which presents 14 reasons (barriers) as to why participants' cooperation might not have been maximal (see Appendix D). These barriers represent 3 dimensions: resource, self-interest, and interpersonal. Finally, participants were thoroughly debriefed and paid for their harvests.

3.3.3 The Simulation: FISH 4.0

A fish stock can be easily conceptualized as a limited, valuable, renewable, common resource pool. One computer program that simulates a fish stock is Fish 4.0 (Gifford & Gifford, 2000), a real-time interactive microworld environment designed for the systematic investigation of individual and small group decision-making in resource management. The program has been used to study factors influencing cooperation in commons dilemmas (e.g., Hine & Gifford, 1996; Chen & Gifford, in press).

FISH 4.0 creates a virtual fishery in which participants act as fishers and harvest from a shared ocean supply (see Figure 3.1 for a screenshot). To enhance realism, participants must

have an incentive to exploit the resource. Therefore, each fish caught is worth a small amount of real money (10 cents). During each season (trial of the experiment), individual fishers decide how much resource to harvest. Each season ends when all fishers have caught as may fish as they wish and returned to port. Resource regeneration occurs between each season through the spawning of remaining fish from the previous season. The notion that the growth of a fish stock is contingent on the remaining fish captures the essence of a commons dilemma: Each fisher must choose to defect (rapid harvesting, resulting in large, short-term gain, at the risk of collapsing the fish stock) or to cooperate (restraint harvesting, resulting in modest, long-term gain, in the interest of sustaining the fish stock). The simulation continues until all the fish have been caught or a number of seasons has elapsed.

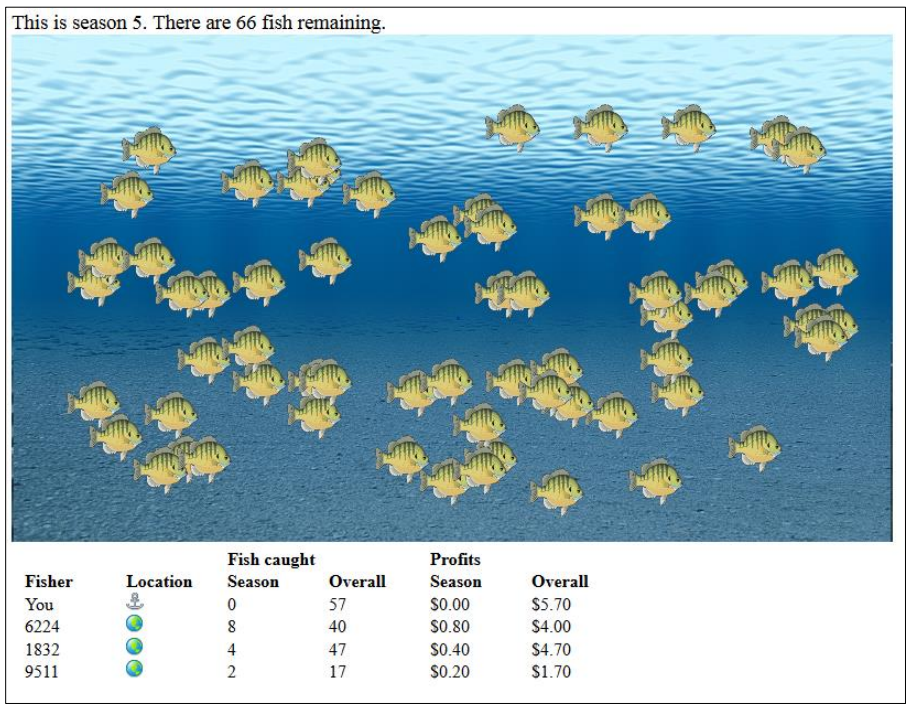

Figure 3.1. A screenshot during the FISH 4.0 simulation.

Several parameters of FISH 4.0 were manipulated to simulate fundamental properties inherent in a real-world commons. The initial number of fish was 80, the maximum stock amount (pool size) the fishery can support. Ten seasons (replenishment trials) were run, but this number was withhold from participants to prevent end-of-session effects (i.e., extra harvesting near the final season). To create a potentially exhaustible commons, no upper limit was imposed to the number of fish that could be caught per season. The spawning (regeneration) rate varied slightly, to be realistic, but averaged to two.

FISH 4.0 employs a mechanized instructional format by presenting text messages and video graphics (e.g., a "fish" disappears from screen once it is caught). Potential experimenter bias is avoided because participation in the simulation required no intervention on the part of an experimenter. An instruction message is presented before the session begins and an end-of-simulation message was presented when the session ends (see Appendix E). FISH 4.0 also provides individualized feedback to participants, including the number of fish caught, the amount of profit earned, and whether they are at ocean or had returned to port. The same information about other fishers is also displayed.

To ensure that participants fully understood the rules and procedures, they watched a video demonstration (see https://www.youtube.com/watch?v=9PGam-zTKcY), ran a practice trial with four seasons, completed a brief comprehension assessment (in multiple-choice format), and had an opportunity to raise questions and concerns before the experimental session began.

3.3.4 Measures of Cooperation

Measures of cooperation in a commons dilemma should include reference to at least one of the four elements: The size of the resource, the number of harvesters, the size of harvests, and the regenerate rate of the resource (Gifford & Hine, 1997). FISH 4.0 automatically utilizes the

four elements to compute two main measures of cooperation: Individual restraint (IR) and individual efficiency (IE). Both measures reflect two different strategies of cooperation: IR as preservationism (taking little or none of a resource) and IE as conservationism or sustainability (taking just enough of a resource so that the fish stock can be regenerated).

Computationally, IR is the proportion of the pool taken by an individual harvester. The formula for IR is $(S - T_1N)/S$, where S is the initial stock size, T_1 is the number of fish taken by the individual harvester, and N is the number of fishers in the group. IR represents the spectrum from preservationism to defection; scores range from 1 (total restraint, i.e., a harvester took no fish) to 0 (equal-share, i.e., a harvester took 1/Nth of the entire pool), to 1-N (no restraint, i.e., a harvester took the entire stock). Thus, IR decreases when an individual harvester takes any amount of the resource.

IE is derived similarly, with the addition to the formula of resource generation rate. Individual efficiency (IE) is computed in two ways, depending on whether the existing resource, in any given season, is in the danger of being extinguished. A resource is "not endangered" when the number of fish in the beginning of the season (S), increased by the regeneration rate (R), would be greater, or equal to, its original stock size (OSS), that is, when OSS <= R*S. The IE (not endangered) formula is computed as IEND = [(S – Ti*N)*R]/OSS. In this study, the stock was never allowed to increase beyond the original stock size.

An IE score of 1 represents perfect sustainability (taking just enough fish so that, once spawning occurs, the resource regenerates to its original size). An IE score below 1 indicates inefficiency or greed—taking so much of the resource that it will be unable to regenerate to its original level. An IE score of 0 indicates another kind of inefficiency—taking1/Nth of the whole

existing pool, which is too much for the pool to regenerate to its original amount (for detailed computational descriptions for IE and IR, see Gifford & Hine, 1997).

The proportional measures of cooperation (IR and IE) are more appropriate in this context rather than absolute measures of cooperation (e.g., the number of resource units harvested or the number of seasons elapsed). Absolute measures fail to capture the dynamic factors that evolve over the course of the simulation. For example, if 15 fish are available in the pool, participants' scores on an absolute measure could range from 0 to 15. The score of 2 appears cooperative, but if only 2 fish remain in the pool, taking 2 fish implies serious noncooperation (by taking all the resource). Hence, the theoretical range of a proportional measure, between 1 (takes nothing) and 1-N (takes all the fish in the pool), in all seasons, is a more valid measure of cooperation.

3.3 Results

3.3.1 Manipulation Check

Participants' written comments about the study were first examined to determine whether they were suspicious about the existence of other fishers, were aware of the connection between the priming manipulation and the resource management exercise, and believed that the experimental procedures and instructions were clear. Almost all participants (95%) indicated that the instructions were clear enough for them to follow. Six participants indicated doubt about the existence of other participants and one participant reported awareness of the priming procedure. Because deception is necessary to retain validity of the study, data from these participants were discarded from subsequent analysis.

To ensure that the manipulation of the primes was effective on the perception of luxuriousness, two manipulation-check questions were included in the product evaluation survey.

Participants rated the quality of each product on a 9-point Likert type scale (1 = "low quality" to 9 "high quality"). They also assessed how favorable their reactions were toward each product on a 5-point Likert scale, with response options ranging from 1 ("poor") to 5 ("excellent"). The average quality score for luxury products (M = 7.68, SD = .70) was higher than non-luxury products (M = 5.47, SD = .70), a statistically significant difference, M = 2.21, 95% CI [-2.57, 1.85], $t(74) = 12.27$, $p < .001$. Participants also reported more favorable reaction toward luxury products (M = 3.63, SD = .12) than non-luxury products (M = 2.70, SD = .14), a statistically significant difference, M = .93, 95% CI [1.21, 0.66], $t(67.35) = 6.72$, $p < .001$.

Product descriptions written by participants were also consistent with the primes. For example, participants in the luxury condition would typically describe the products as "expensive, luxurious, beautiful, and delicate," whereas participants in the non-luxury condition would typically describe the products as "boring, functional, and plain." Thus, the manipulation of primes was successful.

3.3.2 Descriptive Statistics

The sample as a whole was slightly cooperative, but did not harvest to an optimal sustainable level. Average IR was 0.13 (SD = .42, range: -1.51–0.70) and average IE was .26 (SD = .71, range: -2.72–0.39). The mean for the total number of fish harvested was 122.86 (SD = 30.27; range = 8–71). The average number of fish harvested per season was 14.36 (SD = 7.77, range: 6.10–57.00). On average, participants harvested 22.83% (SD = 11.73) of the fish in the pool during each season (range: 8%–71%). The number of season the participants keeps resource from extinction (the number of times the group leaves at least one fish in the ocean) ranged from 1 to 10, with a mean being 9.40 (SD = 1.95). The number of fish replenished per trial ranged from 0 to 40, with the mean being 29.36 (SD = 11.47). The average number of fish available in

the beginning of each trial, after the first trial, was 63.22 (*SD* = 23.09; range: 0–80). After the final season, the average number of remaining fish was 31.29 (*SD* = 15.79, range = 0 to 56). Finally, the average total earnings was $12.29 per participant (*SD* = 3.03, range = 5.70 to 16.70).

Nine measures of cooperation were examined: (1) the number of seasons elapsed without extinguishing the resource pool (Season Lasted) (2) the number of fish harvested per individual per season averaged over seasons (Average Harvested), (3) the total number of fish harvested (Total Harvested), (4) the average number of fish harvested relative to the three other fishers (Other Difference), (5) the average number of fish replenished to the pool over the course of the simulation (Fish Replenished), (6) the number of fish available in the beginning of a season averaged across seasons (Fish Available), (7) the average number of fish remaining in the pool after the final season (Final Stock), (8) the average proportion of the pool harvested by an individual harvester (IR), and (9) the average proportion of the pool harvested by an individual harvester that allows the resource to be regenerated between seasons (IE). A breakdown of these measures by experimental condition is presented in Table 3.1.

Table 3.1
Means (and Standard Deviations) on the 9 Measures of Cooperation by Experimental Condition

	Non-luxury (*n* = 37)		Luxury (*n* = 40)	
	M	*SD*	*M*	*SD*
Season Lasted	10	0	8.83	2.60
Total Harvested	128.95	27.73	117.23	31.74
Other Difference	-6.14	2.38	-9.11	10.19
Average Harvested	12.89	2.77	15.71	10.33
Fish Replenished	31.52	9.11	27.36	13.08
Fish Available	66.67	20.07	60.03	25.40
Final Stock	32.95	12.83	29.75	18.14
Individual Restraint	0.23	0.17	0.03	0.87
Individual Efficiency	0.42	0.36	0.11	0.91

The number of seasons the simulation lasted (Season Lasted) was first examined. In the luxury condition, the average number of season ran without extinguishing the pool was fewer (*M* = 8.83, *SD* = 2.60) than in the non-luxury condition (*M* = 10.00, *SD* = 0). Eight participants (10.40%) were described as early depleters because they extinguished the resource pool before the end of the final (10th) season.[1] All early depleters were individuals who had been exposed to luxury primes.

As for absolute number of fish harvested, participants exposed to luxury primes harvested more fish per trial (*M* = 15.71, *SD* = 10.33) than participants exposed to non-luxury primes (*M* = 12.89, *SD* = 2.77). However, the total number of fish harvested by participants exposed to luxury primes (*M* = 117.23; *SD* = 31.74) was less than participants exposed to non-luxury primes (*M* = 128.94; *SD* = 27.73). Given that the simulation was preprogrammed to last for ten seasons, participants prematurely extinguished the pool acquired less fish (*M* = 81.88, *SD* = 32.65) than participants who managed the resource in a more sustainable manner (*M* = 127.61, *SD* = 26.34).

Other Difference was calculated by subtracting the average number of fish harvested by participants from the average number of fish harvested by other fishers in their group. Thus, a negative difference implies that more fish were taken relative to the three other virtual fishers, and a positive difference implies that fewer fish were taken relative to the others. This variable ranged from -49.33 to 2.23. Participants in the luxury condition demonstrated greater negative own-other harvest difference (*M* = -9.11, *SD* = 10.19) than participants in the non-luxury condition (*M* = -6.14, *SD* = 2.38).

[1] The missing harvesting data for the 8 early depleters were dealt with by excluding the seasons after their simulations ended prematurely. For example, to calculate IR (i.e., proportion of fish harvested averaged over seasons) for an early depeleter who exhausted the resource by the third season, her IR score was calculated by averaging the proportion of fish taken from the first 3 seasons, instead of all 10 seasons.

Further, participants exposed to luxury primes had fewer fish replenished per season (*M* = 27.36, *SD* = 13.08) and fewer available to catch in the beginning of a season, averaged across seasons (*M* = 66.67, *SD* = 20.07) than participants exposed to non-luxury primes (*M* = 31.52, *SD* = 9.11 and *M* = 60.03, *SD* = 25.40, respectively). Participants in the luxury condition also had fewer fish remained in the pool after the final trial (*M* = 29.75, *SD* = 12.83) than participants in the non-luxury condition (*M* = 32.95, *SD* = 12.83).

Finally, the proportional measures of cooperation (IR and IE) were examined. In the luxury condition, IR was close to 0 (*M* = .03, *SD* = .55), suggesting that the participants took about one quarter of the pool in each season. That is, they tended as a whole toward an "equal-share" strategy. The average IE for luxury-primed participants was also close to 0 (*M* = .11, *SD* = 0.90), which indicated inefficiency, that is, taking 1/Nth of the pool was too much for the resource to regenerate itself. For example, with an initial fish population of 80 for 4 fishers, taking the equal share of 20 fish would have depleted the resource by the end of the first season. The optimal sustainable strategy was to leave 40 fish by the end of each season (i.e., IE = 1) so that, once spawning occurred, the resource can be regenerated to the maximum stock size of 80.

In the non-luxury condition, the average IR was 0.23 (*SD* = .17), which indicated that participants harvested less than one quarter of the available pool in each season. The average IE was 0.42 (*SD* = .36), which indicated sustainable practice: Harvesting less than equal-share of the pool would allow the remaining fish to be regenerated.

3.3.3 Correlations

Bivariate correlations among the 9 measures of cooperation were computed: Seasons, Average Harvested, Total Harvested, Other Difference, Fish Replenished, Fish Available, Total Stock, Individual Restraint, and Individual Efficiency (see Table 3.2). Most of these measures

were highly correlated, suggesting that they may be empirically related. Participants who demonstrated more harvesting restraint (IR) practiced more sustainable harvesting strategy (IE), $r(77) = .98$, $p < .001$, took fewer fish per trial (Average Harvested), $r(77) = -.74$, $p < .001$, took more fish relative to other harvesters in their groups, $r(77) = .85$, $p < .001$, accumulated more harvest totals (Total Harvested), $r(77) = .43$, $p < .001$, had more fish replenished between seasons (Fish Replenished), $r(77) = .77$, $p < .001$, had more fish available in the beginning of the season, $r(77) = .74$, $p < .001$, ran more seasons without extinguishing the resource (Season Lasted), $r(77) = .93$, $p < .001$, and left more fish in the pool after the final season (Final Stock), $r(77) = .78$, $p < .001$. Because the two proportional measures of cooperation (IE and IR) were strongly correlated, $r(77) = .98$, $p < .001$), suggesting that they assessed the same latent construct, only IR was retained as the main dependent variable in subsequent analysis.

Table 3.2

Correlations Among the 9 Measures of Cooperation

	Season Lasted	Average Harvested	Total Harvested	Other Difference	Fish Replenished	Fish Available	Final Stock	Individual Restraint	Individual Efficiency
Season Lasted	1								
Average Harvested	-.80**	1							
Total Harvested	.52**	-.11	1						
Other Difference	.88**	-.97**	.24*	1					
Fish Replenished	.69**	-.32**	.80**	.51**	1				
Fish Available	.58**	-.31**	.70**	.51**	.95**	1			
Final Stock	.63**	-.37**	.44**	.54**	.85**	.81**	1		
Individual Restraint	.93**	-.74**	.43**	.85**	.77**	.74**	.78**	1	
Individual Efficiency	.89**	-.76**	.41**	.88**	.78**	.79**	.80**	.98**	1

Note: N = 77; *.Correlation is significant at the .05 level (2-tailed);**. Correlation is significant at the .01 level (2-tailed).

3.3.4. Assumptions

The data were examined to assess their compatibility with the main assumptions of the statistical test for hypothesis testing. Thirteen outliers were assessed by the inspection of boxplots for values greater than 1.5 box-lengths (8 outliers were in the luxury condition and 5 were in the non-luxury condition). Orr, Sackett, and DuBois (1991) advised that outliers represented by genuine data points should not be rejected as invalid, because they are representative of population. Thus, several options to treat outliers were performed. They include running the non-parametric Mann-Whitney U test, transforming the dependent variable, trimming, and winsorizing.

First, a Mann-Whitney U test (Mann & Whitney, 1947) was conducted to determine if IR scores between luxury and non-luxury conditions were different. Distributions of the IR scores for both conditions were similar, as assessed by visual inspection. Median IR score was not significantly different between luxury condition (Mdn = 0.22) and non-luxury condition (Mdn = 0.23), $U = 693$, $z = -.479$, $p = .632$, $r = -0.05$. Notably, this test tends to have lower statistical power than parametric tests (Zimmerman, 1985).

Second, because outliers cause non-normality, several methods of transformation (to correct a negatively skewed data) were performed. They included a "reflect and square root" transformation, a "reflect and logarithmic" transformation, and an "inverse" transformation. Transformations were unsuccessful, suggesting that the data cannot be completely normally distributed.[1]

Third, trimming involves removing the outliers from the sample. Hawkins (1980) suggested that trimming was appropriate when an outlier is caused by (1) typographical errors

[1] Only IR scores in the luxury condition was not normally distributed, as assessed by Shapiro-Wilk's test ($p < .05$). Transforming the entire variable can have negative consequences because successful transformation on non-normal data can turn normal distributions (non-luxury group) into a non-normal distribution.

(beyond maximum possible value), (2) measurement error, and (3) contaminated distribution. In this data, outliers are legitimate values and trimming was counterintuitive to the basic principle of random sampling. If the outlying data points are removed from the data set (16% trimming rate), the substantial loss of data points can also lead to significant loss of statistical power. When a t-test was conducted with and without removing the 4 most extreme outliers (data points that were greater than 3 box-lengths), the significant IR difference between conditions remained. Thus, outliers were retained in the data set.

Fourth, another common procedure for treating outliers is winsorizing, that is, by replacing extreme values with more plausible values (an attenuated version of the data). Three outliers with z-scores of more than 3 were winsorized by the mean plus 3 times the standard deviations (e.g., Field, 2005). This approach was adopted because the 3 extreme data points accounted for less than 5% of the data, and thus would not greatly affect the accuracy of the p-value.

Normality for IR scores in both conditions were examined by Shapiro-Wilk's test and visually inspected by their histograms. IR scores in the luxury group were normally distributed ($p > .05$), with a skewness of 0.311 ($SE = 0.388$) and a kurtosis of 0.989 ($SE = 0.759$). However, IR scores in the non-luxury group were not normally distributed, with a skewness of -1.96 (SE = 0.37) and kurtosis of 2.98 ($SE = 0.73$). To evaluate the assumption of homogeneity of variance (i.e., whether the variances among the dependent variables were the same across all levels of the factor), Levene's tests were performed. The assumption of homogeneity of variances were violated for IR scores (all ps $<.05$).

3.3.5 Hypothesis 1: The Effects of Luxury on Harvesting Behaviour

To test the first hypothesis, that exposure to luxury primes would decrease individual restraint harvesting in a commons dilemma more than would exposure to non-luxury primes, an independent *t*-test was conducted using priming as the independent variable, and IR as the dependent variable. Results indicated that participants exposed to luxury primes displayed less IR (M = .03, SD =.55) than participants exposed to non-luxury primes (M = .23, SD = .17), a statistically significant difference of 0.20, 95% CI [0.01 to 0.38], $t(47.137) = 2.164$, p = .036. Cohen effect-size r was 0.30, which indicated a medium effect and explained 9% of total variance (Cohen, 1988). Following the recommendation of Lomax and Hahs-Vaughn (2012), the Welch t' test was also conducted when the homogeneity of variance assumption was violated. The results further confirmed a significant difference in IR between luxury and non-luxury groups, Welch t' = 4.68, rounded df = 47, p =.036. Thus, these results supported the first hypothesis.

3.3.6 Hypothesis 2: Psychological Barriers to Cooperation

The second hypothesis was that less cooperative harvesting behaviour would be associated with stronger psychological barriers. As noted, these barriers were characterized by three dimensions: resource, self-interest, and interpersonal. Before testing for the hypothesis, the internal consistency for the three barrier subscales was examined. Consistent with previous study (Chen & Gifford, in press), the 3 subscales were reliable: for Resource, α = .74, for Interpersonal, α = .84, and for Self Interest, α = .76. In the Self Interest subscale, one item ("In this situation, at least, taking more fish was appropriate") possessed lower corrected-item total correlations and thus was removed to improve reliability. Although participants exposed to luxury primes experienced more resource-related (M = 2.13, SD = .92), interpersonal-related (M

= 2.51, *SD* = .89), and self-interest-related barriers (*M* = 2.46, *SD* = 2.18) than participants exposed to non-luxury primes (Resource, *M* = 2.07, SD = .79, Interpersonal, *M* = 2.51, *SD* = .86, and Self Interest, *M* = 2.31, *SD* = .98). However, three independent *t*-tests revealed that participants exposed to luxury primes did not significantly differ from participants exposed to non-luxury primes on the three dimensions of psychological barriers (range from p = .102 to *p* > .250). Reliabilities and descriptive statistics for the three barrier subscales are presented in Table 3.3.

Table 3.3
Descriptive Statistics for Psychological Barriers by Condition

	Condition	*n*	Min	Max	*M*	*SD*
Resource	Non-luxury	36	1.00	3.50	2.08	.79
(α = .74)	Luxury	38	1.00	4.25	2.13	.92
Interpersonal	Non-luxury	36	1.00	4.00	2.18	.86
(α = .84)	Luxury	39	1.00	4.14	2.51	.88
Self Interest	Non-luxury	34	1.00	4.50	2.31	.98
(α = .76)	Luxury	39	1.00	5.00	2.46	1.09

Note: the Resource subscale was based on 4 items, the Interpersonal subscale was based on 7 items, and the Self Interest subscale was based on 2 items. Response options ranged from 1, "strongly disagree," to 7, "strongly agree."

To test the second hypothesis, zero-order correlations between individual restraint (IR) and the three barrier dimensions were computed. Significant negative relations occurred for all three dimensions. IR was most strongly related to Interpersonal $r(75) = -.38$, $p = .001$ and Resource, $r(74) = -.343$, p = .003, followed by Self-Interest, $r(73) = .-249$, $p = .034$. Thus, the second hypothesis was supported.

Also of interest was the finding that average perceived barriers was correlated with several measures of cooperation. Participants with stronger perceived barriers was related to fishing fewer seasons without extinguishing the pool, $r(72) = -.31$, $p = .008$, having fewer fish available in the beginning of a season, $r(72) = -.49$, $p < .001$, fewer fish harvested, $r(72,) = -.28$, $p = .016$, fewer fish replenished per trial, $r(72) = -.46$, $p < .001$, fewer fish left in the pool after

the final season, $r(72) = -.48$, $p < .001$, more fish harvested relative to other fishers, $r(72) = -.31$, $p = .008$, less individual restraint, $r(72) = -.39$, $p = .001$, and resource management efficiency, $r(72) = -.43$, $p = .001$. Correlations among these variables are presented in Table 3.4.

Table 3.4
Correlations among Psychological Barriers and the Cooperation Measures

	Resource	Interpersonal	Self Interest	Average barrier
Seasons Lasted	-.30*	-.30*	-.20	-.30*
Average Harvested	-.27*	.15	.20	-.47**
Total Harvested	-.25*	-.30*	-.15	-.26*
Fish Available	-.41**	-.48**	-.32**	-.47**
Final Stock	-.29*	-52**	-.39**	-.48**
Fish Replenished	-.35**	-.48**	-.31**	-.44**
Other Difference	-.33**	-.25*	-.25*	-.31**
Individual Restraint	-.36**	-.37*	-.25*	-.38**
Individual Efficiency	-.39**	-.39**	-.30*	-.41**

Note: Average barrier ($\alpha = .90$) was calculated based on the average of 13 individual barriers; *.Correlation is significant at the .05 level (2-tailed);**. Correlation is significant at the .01 level (2-tailed).

3.3.7 Psychological Barriers as Moderator

To test whether cooperation is a function of multiple factors, and more specifically, whether psychological barriers to cooperation moderated the relationship between exposure of primes and cooperation, a hierarchical multiple regression analysis was conducted by including an interaction effect in the model. In order to provide valid predictions, the data were examined to assess whether they met the six assumptions of a standard multiple regression analysis: Independence of observation, linearity, homoscedasticity, unusual points, normality of residuals, and multicollinearity (Field, 2005).

First, independence of observation was met, as assessed by Durbin-Watson statistics of 2.43. Second, linear relationship and homoscedasticity were assessed by plotting the studentized residuals against the predicted values. Visual inspection of the scatterplot and partial regression

plots suggested that the relationship between the dependent variable and independent variables was likely to be linear, and that the spread of the residuals was likely to meet the assumption of homoscedasticity. Third, all cases have standardized residual of less than ±3, leverage values below 0.2, and Cook's distance below 1. Thus, the data presented no significant outliers, high leverage points, or highly influential points. Fifth, the residuals were normally distributed, based on visual inspection of the histograms and the P-P Plots. Finally, none of the independent variables have correlations greater than 0.7, suggesting no issues with multicollinearity. However, inspection of tolerance values revealed potential multicollinarity with the interaction term (VIF > 10).

I followed the procedure recommended by Aiken and West (1991) to test a continuous moderator variable effect (psychological barriers) within levels of a categorical variable (luxury or non-luxury condition). This procedure involved a two-step hierarchical regression analysis for the criterion variable (IR). A dummy variable was created to code the predictors. Exposure to luxury primes was coded as 1 and exposure to non-luxury primes was coded as 0 (reference category).

In the first step, two variables were included: priming condition and average psychological barriers. These variables accounted for a significant amount of variance in participants' IR, $R^2 = .18$, $F(2, 69) = 7.44$, $p = .001$. Following Aiken and West (1991), these variables were centered to avoid problematic high multicollinearity with the interaction terms. Centering was conducted by PROCESS (Hayes, 2013).

In the second step, the interaction term between priming condition and barriers was added to the regression model, which accounted for a significant proportion of the variance in participants' IRs, $\Delta R^2 = .06$, $\Delta F(1, 68) = 5.51$, $p < .05$, $b = -.30$, $t(68) = -2.06$, $p = .022$. The

interaction plot was presented in Figure 3.2. Simple slopes analysis revealed that, at low levels of perceived barriers, exposure to luxury primes had no effects on IR, $b = 0.07$, $t(72) = .7557$, $SE = 0.93$ $p > .250$, 95% CI [-0.12, 0.26]. However, at high levels of perceived barriers, exposure to luxury primes had significantly negative effects on IR, $b = -.40$, $t(72) = -2.1953$, $SE = 0.18$, $p = .032$, 95% CI [-0.77, -0.37]. Thus, psychological barriers were a significant moderator of the relationship between priming and IR.

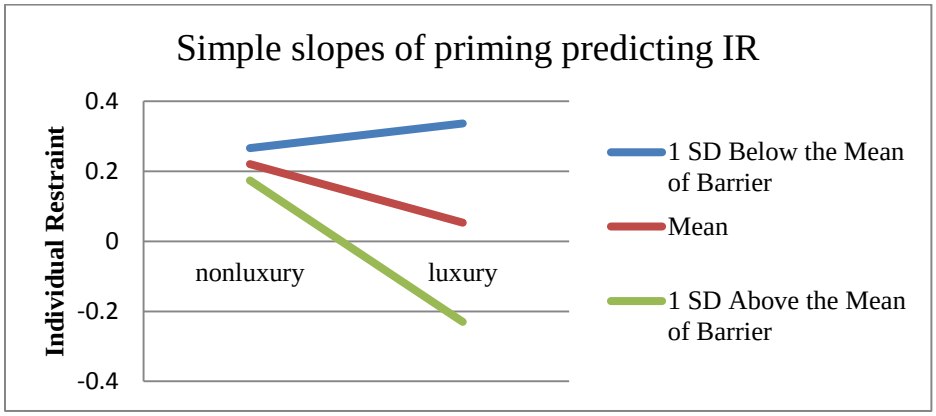

Figure 3.2.
Simple slopes of priming predicting individual restraint (IR) for 1 *SD* below the mean of psychological barriers, the mean of psychological barriers, and 1 *SD* above the mean of psychological barriers. The unstandardized simple slope for individuals 1 *SD* below the mean of psychological barriers was .07, the unstandardized simple slope for individuals with a mean level of psychological barriers was -.17, and the unstandardized simple slope for individuals 1 *SD* above the mean of psychological barriers was -.40.

3.3.8 Temporal Assessment of Cooperation

To examine the temporal dimension of cooperation over the course of the commons dilemma confronted by participants in the two experimental conditions (exposure to luxury and non-luxury), see Figure 3.3 for the number of fish available at the beginning of each season.[1] To examine whether fish available differed significant across seasons in the two priming conditions,

[1] To examine harvest decisions across the life of the dilemma, available fish was chosen as the measure for cooperation. If IRs were chosen, early depleters who prematurely extinguished the resource presents missing values for subsequent trials. Thus, estimating their harvesting levels is implausible if the resource had already depleted. Thus, a more ecologically valid measure of cooperation is the number of fish available in the beginning of each season. For example, if an early depleter extinguished the pool by the 3rd season, the number of fish available for the subsequent seasons is 0.

a 2 x 10 mixed-design ANOVA was conducted with a between-subject factor of condition (luxury, non-luxury) and a within-subjects factor of season (season 1 to 10). To detect outliers, studentized residuals were calculated. Two outliers with residuals (standard deviations) $\geq \pm 3$ were winsorized by replacing the outlier value to one unit smaller than the second smallest value. This procedure ensured that data points maintain the rank (i.e., the modified data points had the least values).

Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(44) = 831.38$, $p < .001$, therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = .28$). The results revealed a significant decline in available fish across seasons, $F(2.53, 189.90) = 23.16$, $p < .001$, partial $\eta^2 = .24$. However, the main effect of priming was not significant, $F(1, 75) = 2.86$, $p = .095$, $\eta^2 = .04$. These results were qualified by an interaction effect between condition and season on available fish, $F(9, 75) = 1.94$, $p = .044$, partial $\eta^2 = .03$.

The significant interaction was followed-up by examining simple effects for condition (testing for differences in available fish between luxury and non-luxury groups at each season) and for season (testing for differences in available fish between seasons for each condition). Simple effects of condition revealed one significant difference in available fish between groups near the mid-point of the simulation, $F(1, 75) = 4.07$, $p = .051$, partial $\eta^2 = .05$. In the beginning of the 7th season, available fish was significantly fewer in the luxury condition ($M = 54.80$, $SD = 31.68$) than the non-luxury condition ($M = 67.24$, $SD = 20.91$).

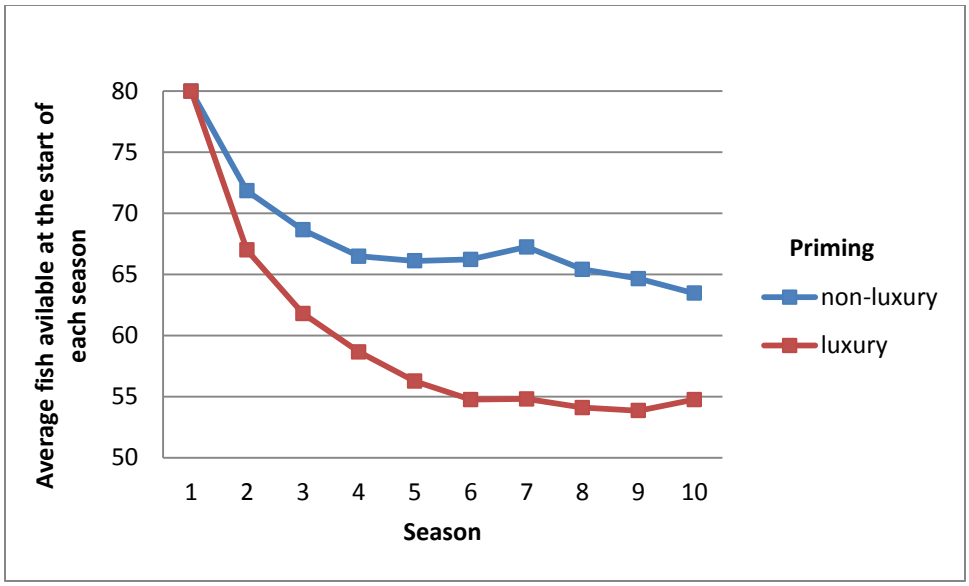

Figure 3.3. Average number of available fish at the start of each season for the two priming conditions. The initial stock size was 80, with the regeneration rate of 2. With a perfectly sustainable strategy, the resource could be maximally regenerated to the initial fish population of 80 over 10 seasons. To maintain this amount, the group (1 participant and 3 virtual fishers) could harvest a maximum of 40 fish (10 fish per fisher).

Simple effect of season revealed significant declines in available fish over time both in the non-luxury condition, $F(2.374, 85.46) = 9.94$, $p < .001$, (*M*s for season 1 to 10 = 80, 72, 69, 66, 66, 66, 67, 65, 65, 63), and in the luxury condition, $F(2.513, 98.02) = 14.84$, $p < .001$, (*M*s for season 1 to 10 = 80, 67, 62, 59, 56, 55, 55, 54, 54, 55). The overall magnitude of decline was greater in the luxury condition, $\eta^2 = .269$, a larger effect size, than the non-luxury condition, $\eta^2 = .216$. Pairwise comparison revealed that, in the non-luxury condition, decline in available fish was or near significant in the first three consecutive seasons (*p*s = .002, .037, and .061), followed by a tailing off after the fourth season (see Figure 3.3). In the luxury condition, sharp descent in available fish occurred in the first four seasons (decline from season 1 to season 2, $p < .001$, followed by *p*s = .002 and .025, and .069), followed by a shallow slope after the fifth season. Thus, while in the non-luxury condition, the average available fish was sustained at approximately 66.5 fish (82 % of initial stock size) after the third season, in the luxury condition,

the average available fish was 54.6 (68 % of initial stock size) after fish population had declined precipitously during the first four seasons.

3.3.9 Early Depleters

Because all early depleters were previously exposed to luxury primes, their harvesting behaviour over the course of the simulation and their motives to pursue short-term profits were explored. Recall that 8 of 77 (10.4%) participants (20% in the luxury condition) were classified as early depleters because they exhausted the resource before the end of the final season. Two early depleters exhausted the supply by the 1st season; two by the 3rd season; one by the 4th season; one by the 6th season; and two by the 7th season. Thus 6.5% of participants extinguished the resource before halfway through the simulation.

Given that 4 fishers shared the ocean that supports the maximum stock size of 80, an equal-harvest of 20 fish per fisher (1/Nth of fish population) would extinguish the resource. The sustainable equal-share of harvest would be 10 fish, which would allow the resource to be regenerated to its original size. In the first season, the early depleters took an average of 36.38 fish (SD = 6.54), which was significantly higher than the remaining 69 participants (M = 17.01; SD = 8.23), with the significant mean difference of 19.36, $t(7.32) = 2.93$, $p = .021$, $d = 2.17$, 95%CI [34.86, 3.86]. Thus, early depleters not only harvested an average of 45.58% of the existing pool but they also took more than their equal-share. Harvesting such a large amount severely reduced their available fish supply for subsequent seasons. In fact, early depleters harvested fewer total fish (M = 81.88, SD = 32.65) than non-depleters (M = 127.61, SD = 26.34), with a significant mean difference of 45.73, $t(75) = 4.54$, $p < .001$, $d = 1.05$, 95% CI [25.65, 65.81].

To explore what hindered early depleters to optimally cooperate in the commons dilemma, self-reported psychological barriers were examined. On average, early depleters reported stronger perceived barriers (M = 3.02, SD = .62) than non-depleters (M = 2.19, SD = .78), $t(70) = -2.70$, p =.009, d = 0.65, CI 95% (-1.44, -0.22). Specifically, they experienced stronger interpersonal barrier dimension (M = 3.21, SD = .51) than non-depleters (M = 2.25, SD = .86), $t(12.56) = -4.64$, p = .001, d = 2.62, CI 95% (-1.42, -0.51). Resource barrier dimension was also stronger among early depleters (M = 2.68, SD = .86) than non-depleters (M = 2.04, SD = .51), $t(72) = -1.91$, p = .061, d = .45, 95% CI (-1.30, 0.03).

To explore what governed harvesting decisions among early depleters, written responses to the post-study, open-ended questions were examined. Of the 8 early depleters, 6 indicated no cooperation, one indicated cooperation at some point, and one indicated cooperation at the maximum extent possible. Their responses to describe their strategies mostly fall into two general themes: Interpersonal influences and environmental uncertainty. In particular, most early depleters stated that they were motivated by short-term greed (i.e., took as many fish as they could) because they were competitive with other harvesters, or that they were unsure about how many seasons fishing would last. Some sample statements include:

1) I wanted to make as much money for myself as I could. I thought someone would take all the fish if I didn't.
2) I got suspicious someone would make us run out, and then I made sure I was the one who took all of the fish
3) I was trying to catch as much fish that I could before the session expired.
4) Since I didn't know when the last season would be, eventually I fished almost every fish in the last season.

3.4 Discussion

The goal for the present study was to better understand the psychological effects of luxury on cooperative behaviour in a replenishable multi-harvester resource dilemma situation. This study has several unique contributions to the commons dilemma literature. First, the study is the first to incorporate a wide range of harvest measures and raises some important conceptual and computational issues on the nature of cooperation in commons dilemmas. Second, it provides preliminary evidence that exposure to luxury causes a few people to defect (early depleters) by exploiting a common good, sabotaging optimal collective outcomes. Third, psychological barriers appear to moderate the relationship between priming and cooperation. Fourth, the study is among the first to examine temporal dimension of harvesting behaviour throughout the course of the dilemma. Finally, the microworld employed in the present study allows the results to be generalized to a more complex, dynamic, interactive, and realistic decision context than those previously used in commons dilemma studies.

3.4.1 Individual Harvest Behaviour

The sample, as a whole, did not appear to cooperate to the optimal sustainable level. Consistent with previous studies (Roch, Lane, Samuelson, Allison, & Dent, 2000), participants tended to adopt a single-season equity strategy (i.e., taking an equal share of each trial's available pool). This "equal-division" heuristic (Allison & Messick, 1990) appears to be adopted without much deliberation and results in short-term "fair" payoffs. Similarly, Schelling (1960/1980) argued that most people generally have "splitting the difference" or "equal pie division" conceptions by virtue of mathematical simplicity, processing efficiency, and psychological prominence, not because they are morally or logically compelling. This assumption is empirically supported by pervious work (Harris & Joyce, 1980; Rabin, 1997).

3.4.2 Measures of Cooperation

The present study advances previous research on common dilemmas with a wide range of objective measures for individual cooperative behaviour. They include individual harvest restraint and efficiency measures, number of trials completed, number of resource units replenished to the pool, and number of resource units remaining after the final trial. Consistent with previous research (e.g., Gifford, 1982; Hine & Gifford, 1996), although efficiency measures have notable conceptual distinctions, they are highly correlated.

Number of resource units harvested, a common approach to assess cooperation, does not appear to be an adequate indicator of long-term sustainability. The present results indicate that defectors who prematurely extinguished the resource actually acquired fewer total fish than participants who made more collective efforts to preserve the commons. Further, absolute measures of cooperation do not account for other contextual factors, such as resource regeneration rate and the size of the resource pool (Gifford & Hine, 1997). If the resource is severely depleted, such as is the case for endangered species, an equal-share harvest would extinguish the common pool. In this situation, full restraint would be appropriate. Conversely, if the resource is abundant, taking the same amount would appear to be inefficient, because harvesters do not take enough fish that would have been replenished naturally.

3.4.3 Psychological Effects of Luxury on Cooperation

The first hypothesis, that exposure to luxury would decrease cooperative harvesting behaviour in a commons dilemma, was supported. Compared to the control group, participants exposed to luxury primes accumulated lower total harvest amounts, ran fewer seasons without extinguishing the resource pool, harvested more fish per season relative to other fishers, had fewer fish replenished to the pool, had less fish available to catch, had fewer fish in the pool after

the final season, and demonstrated less individual restraint (less likely to sacrifice self-interest to preserve the resource), and less individual efficiency (less likely to allow the resource to be fully regenerated).

The hypothesized results, however, should be interpreted with caution. Exposure to luxury primes caused some, but generally not all harvesters to deplete the resource prematurely. This raises a critically important question: Why does luxury induce acquisitive nature of *some* people to only concern gains accrue to themselves, without much consideration for long-term deficient collective outcomes? Early depleters' comments reveal short-term greed motivations behind their defective choices. This suggests that exposure to luxury may cause some people to act in favor of short-term personal reward over long-term common interests. More research is required to examine as to why these early depleters are susceptible to the effects of luxury.

3.4.4 Temporal Dimension of Cooperation

As mentioned, commons dilemma situations present a complex, time-dependent, dynamic decision making task (Brehmer, 1992; Gonzalez, Vanyukov, & Martin, 2005). Harvesters have to make a series of decisions over the course of the dilemma, and are required to prioritize different goals contingent to successive interpersonal influences and situational demands (e.g., when a resource is depleting versus abundant). Further, any course of action can have potential repercussions and consequences on the state of the resource. Thus, Gifford and Heine (1997) proposed the sequential-influence approach, emphasizing an evolving succession of influences that govern harvesting decisions across the life of the dilemma.

As an indirect support for the sequential-influence perspective, the present study reveals changes in cooperation as the dilemma unfolded. A sharp decline in available fish during the initial stages of dilemma may indicate inexperienced harvesters' confusion, uncertainty, and

ambiguity about the simulation. Individuals often enter the dilemma with limited abilities to processing information accurately and efficiently (Dawes, 1980), are uncertain about what behaviour would constitute defection, or may readily use the equal division of resource as a heuristic distribution rule. In fact, social uncertainty (in harvest strategies that others will adopt) and environmental uncertainty (in pool size or regeneration rate) could lead to overharvesting (Hine & Gifford, 1996; Messick, Allison, & Samuelson, 1998). Available fish began to level off at the middle of the simulation, suggesting prevailing conservation motive and close monitoring of the resource, perhaps due to increased consideration for future outcomes.

Another notable finding is that the decline in available fish in the luxury condition was more abrupt in the luxury condition that in the non-luxury condition. One plausible explanation for the precipitous descent is that most early depleters exposed to luxury primes had prematurely extinguished the resource pool before halfway through the simulation. Thus, the effects of luxury appear to be immediate, resulted in pursue of short-term personal advantages and the "get-it-while-you can" mentality. In short, the present findings highlight the importance of process-oriented analysis, revealing harvesting behaviours in a series of progressing stages that are otherwise lacking in outcome-oriented focus in most existing commons dilemma research.

3.4.5 Psychological Barriers to Cooperation

Consistent with previous research (Chen & Gifford, in press), suboptimal cooperation was associated with perceived psychological barriers related to environmental factors (Resource), harvesters' beliefs about others' choices (Interpersonal), and the desire for individual gains (Self Interest). Interestingly, although participants in both conditions experienced similar levels of barriers, the relationship between priming and cooperation appear to be dependent on the levels of perceived barriers. When participants perceived low levels of barrier, luxury

exposure had no effect on their harvesting behaviour. However, at high levels of perceived barriers, exposure to luxury primes was associated with lower levels of cooperation. One plausible interpretation is that when optimal harvesting strategies are hindered by perceived difficulties and obstacles, individuals are unsure of the best course of action. Environmental cues, such as luxury objects, may help define and disambiguate potentially complex situations, thereby providing cognitive constructs, situational interpretations, or behavioral scripts to guide harvesting behaviours.

3.4.6 Limitations and Future Directions

The present study raises a number of questions to be addressed in future research. First, because luxury does not appear to have a universal effect on greediness in commons dilemma, characteristics and motivations of defectors susceptible to these effects require further examination. Whether this is because (1) that early depleters hold more positive attitudes toward competition, (2) that they have stronger hedonic orientation, (3) that they are unable to resist short-term gratification, or (4) that they are more likely to be influenced by environmental cues due to perception of ambiguous and novel resource management situation, worth further investigation.

Second, although the study demonstrated changes in cooperation over the course of dilemma, the extents to which different motives are activated in different stages remain unclear. Harvesting decisions are governed by several, often conflicting, motives, such as conformity to follow group norm, an urge to get what one can, and the desire to use the pool responsibly and efficiently, but these pressures possibly changes in dominance as a dilemma proceeds (Messick et al., 1983). Advances in sophisticated statistical and observational methodologies, such as event sampling methodologies and time-series analysis, are increasingly feasible for future

studies to understand ongoing experiences and events that lead to individual harvesting behaviours.

Third, the microworld employed in the present study merits some comments about ecological validity. One may argue that simulations are inordinate abstract and oversimplified that they cannot establish valid generalization to more complex real-world system that involve many people. Microworlds capture theoretically important aspects inherent in the field experience (e.g., goal conflicts, feedback delays, and uncertainty) and thus provide a valid foundation for broad generalizations of basic psychological mechanisms involved in any commons dilemmas (Chen & Bell, in press; DiFonzo, Hantula, & Bordia, 1998; Omodei & Wearing, 1995). Observation of research participants revealed that even simulations with small payoffs can generate high psychological realism, such as hostile responses toward defectors (Tindall & O'Connor, 1987). Whereas studies conducted in natural environment are realistic but subject to confounds, microworlds, with their computer technology, not only afford accuracy and efficiency, but are also able to establish definitive causal inferences. Although the logic of using microworlds appears reasonable, research conducted in field settings is necessary to further validate the present findings.

3.4.7 Conclusion

As part of investigation on the implicit link of luxury and self-interest, the present study offers evidence that exposure to luxury primes increases the tendency for some individuals to defect through noncooperative, rapid, short-term, self-interested, resource-exploitative harvesting when managing a valued shared limited resource. Commons dilemma, whereas gain to self with loss shared by the greater whole, is ubiquitous in contemporary environmental problems.

The present study suggests that tragedies of the commons do not necessarily involve amoral or avaricious individuals taking advantages of common goods, but situational influences, even the mere presence of luxuries, can potentially lead some to defect. As population grows, resources become scarcer, and exposure to and consumption for luxury goods increase, the present findings are particularly important to understand self-interested decisions that may lead to resource destruction.

CHAPTER 4

Study 3: The Influences of Luxury Objects on Unethical Behaviour

Study 1 began to examine the effects of luxury on social preferences. It revealed that exposure to luxury increased the weight individuals attached to one's outcome. Study 2 further demonstrated that exposure to luxury reduced individual harvest restraint in a commons dilemma, and in particular, caused some harvesters to prematurely exhaust the resource. The experimental design of Study 3 served to further investigate the effects of luxury primes on unethical behaviour and decision-making.

The objective of Study 3 is to distinguish the activation of self-interest from unethical tendency. Specifically, I explored whether the mere exposure of luxury primes would not only activated self-interest, as in Study 1, possibly through an increased focus on personal desire, but whether this activation would increase one's propensity to inflict harm to others. That is, my research question was that whether exposure to luxuries would cause direct harm to others through an increase in people's focus on fulfilling self-directed pleasure, and perhaps through increased favorable attitudes toward greed.

4.1 Exploratory Questions

Question 1: Would exposure to luxury increase positive attitudes toward greed?

Question 2: Would exposure to luxury increase unethical decision-making tendencies?

Question 3: Would exposure to luxury increase unethical behavioural tendency by taking more candy that belong to children?

4.2 Methodology

4.2.1 Participants and Design

Seventy-three undergraduate students (15 male, 58 female) at the University of Victoria were recruited from the psychology research participation pool and participated in the study, for which they received bonus credit toward a psychology course. Their age ranged from 17 to 42 years old. The majority of participants (78.1%) fall into 18-21 age group and were enrolled in either the faculty of social science (43%) or science (32%). Most participants (80.8%) indicated that English was their primary language, followed by Chinese (11.0%), and other languages (4.2%), including French, German, and Japanese. Participants were randomly assigned to one of two experimental conditions: luxury priming (n = 35) and control (n = 38). This induction primes subjective perceptions of (non)luxuriousness. The main dependent variables were unethical decision making and a behavioural measure of unethical tendencies: The number of candies taken supposedly intended for children.

4.2.2 Procedure

As a cover story, participants individually reported to a study entitled "Product Decisions II," and were informed that the general purpose of the study was to assess how people evaluate different consumer products. Participants completed an online survey using Qualtrics. The survey included a consumer product evaluation survey with primes (either luxury or non-luxury consumer products). This is followed by the Unethical Decision Making Scale (Detert, Treviño, Sweitzer, 2008), a measure on attitudes toward greed (Yamagishi & Sato, 1986), as well as several other unrelated questions designed to disguise the study's true purpose.

To measure unethical behaviour, I followed a procedure employed by previous research on psychological entitlement (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004; Piff et al.,

2012). Before presenting the online survey, the experimenter stated that she had to prepare for a study in the Child Developmental Laboratory next door. Participants were instructed to come to the Child Developmental Laboratory once they had completed the survey. When the participants arrived next door, the experimenter presented a jar of individually wrapped Halloween candies, ostensibly designated for children participating in studies. The jar contained approximately 40 pieces of candy, including Reese's™, Hershey's™, Skittles™, and KitKat™. They were similar in size but varied in taste. The jar was kept approximately two-thirds filled for all sessions. The experimenter stated that the jar should have enough candy for the children but they could take as many as they wish. The tone of voice was casual, intended to appear as an afterthought rather than a planned script of the study. To enhance realism, the jar was attached to a post-it note that reads "Please deliver to Dr. Gifford's Child Development Laboratory: Cornett B311." The experimenter then left the participants alone with the candy jar for approximately 30 seconds while she obtained a debriefing form. Participants then completed a post-study questionnaire, which they indicated the number of candies they had taken. Finally, participants were provided full details about the study's objectives and explanations for the use of deception. Participants were thanked, compensated with the course credit, and left with the candy.

4.2.3 Measures

4.2.3.1 Measure of Attitudes toward Greed (Yamagishi & Sato, 1986). This scale was employed to examine positive beliefs to pursue one's self interest. Six items assessed the extent to which participants endorsed beliefs that greed is beneficial, moral, and justified. Participants rated their degree of agreement with each item on a 7-point Likert scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items were "To be successful person in this society, it is

important to make use of every opportunity" and "It is not morally bad to think first of one's own benefit and not other people's." See Appendix F for all scale items.

4.2.3.2 The Unethical Decision Making Scale. Participants' unethical decision-making tendencies were measured in the Unethical Decision Making Scale (Detert, Treviño, Sweitzer, 2008). The scale presents seven different scenarios of an actor unrightfully benefiting from something. Participants were instructed to imagine, as vividly as possible, that they were in each scenario and to evaluate the likelihood that they would engage in the unethical action, on a 7-point scale, ranging from 1 (*not at all likely*) to 7 (*highly likely*). A sample scenario is "You get the final exam back from your professor and you notice that he's marked correct three answers that you got wrong. Revealing his error would mean the difference between an A and a B. You say nothing." See Appendix G for all items in the Unethical Decision Making Scale. To consider the potential presence of social desirability bias, participants were reminded, just prior to completing the scale, that "*there are no correct answers, as people vary widely in how likely they would engage in different behaviors. Please provide truthful responses, not what you think is more desirable*."

To minimize potential confound associated with moral value judgments (belief that one would espoused as an ideal code of conduct), the scenarios were modified to reflect hypothetical everyday experience rather than inquiring about moral judgment of wrongness (i.e., the morality of the actions per se). Controversial behaviours with less moral evaluation consensus, such as abortion, extramarital affairs, and consumption of red meat, were excluded in the measure because they tend to trigger intense emotional reactions. Thus, the scenarios were restricted to everyday situations that are generally regarded as morally problematic (e.g., cheating), rather than idiosyncratic events or serious transgression (e.g., child abuse). This would ensure

substantial applied importance (ecologically valid), and that responses to the measure could potentially be influenced by experimental manipulation, rather than deep-rooted moral values.

The Unethical Decision Making Scale was validated in three ways (Detert, Treviño, & Sweitzer, 2008). First, a panel of business ethics experts agreed that the behaviours described in each scenario represents a violation of one or more ethical principles (e.g., rights, justice). Second, in a validation procedure, individuals with higher (i.e., those indicated that they would be likely to engage in the behaviours depicted) were more likely to keep a $8 cash received in the mail, ostensibly sent by mistake, for completing a survey that they did not complete. Third, scores on the measure were correlated with self-reports of actual engagement of unethical actions, such as cheating, lying, and stealing.

4.3 Results

4.3.1 Manipulation Check

4.3.1.1 Manipulation check on primes. To verify that participants perceived the manipulation as intended, participants were inquired to rate the quality of each consumer product on a 7-point Likert type scale (1 = "very poor" to 7 = "excellent"). On average, products presented in the luxury condition were perceived as higher in quality (M = 4.14, SD = .41) than products presented in the non-luxury condition (M = 3.31, SD = .44). Written descriptions of the products were also consistent with primes. A sample description for luxury products was "Luxurious and powerful with ivory-leather seats." Thus, the manipulation of primes was successful.

4.3.1.2 Post-study questionnaire. Data quality was inspected by examining participants' responses to the post-study questions. Participants demonstrated clear understanding of the experimental instructions (M = 6.47, SD = .77) and followed them (M = 6.70, SD = .49) on the

response scales that ranged from 1 (“not at all”) to 7 (“to a great extent”). Responses to funnel debriefing questions revealed that 16.4% of participants were suspicious about some aspects of the study and 57.5% thought that some of the scales they completed were related. However, no participant was aware of the effects of primes on subsequent unethical decision-making and behaviour nor accurately guessed the study’s hypotheses.

Post-study debriefing revealed that three participants provided poor quality data and thus were omitted from subsequent analysis. The first participant had limited English language comprehension and did not fully understand the scenarios presented in the scale. The second participant was suspicious about taking candies because she recently took part in another experiment in which a cookie was offered as part of that experiment. The third participant thought that no child was involved because he misinterpreted the “Child Developmental Laboratory” as a psychology course on child development.

4.3.1.3 Construct validation exercise. After the study, a construct validation exercise was conducted to verify that taking candy from children represents unethical behaviour. An undergraduate researches assistant approached 40 pedestrians in Downtown Victoria requesting their help to validate a 5-item “everyday moral judgment” scale. Respondents read 5 short scenarios (1-2 sentences) and provided ratings on a 7-point Likert scale (ranging from 1 “*not at all unethical*” to 7 “*extremely immoral action*”) on whether the behaviour depicted in each scenario was unethical. To represents the behavioural measure of the study, one item was designed as “Ashley, a university student, takes away several pieces of Halloween candy intended for some daycare children.” The mean for this item was slightly above the midpoint (M = 3.73, SD = 1.60). Thus, the results suggest that taking candy intended for children was a valid measure of unethical behaviour.

4.3.2 Assumptions

A validation option in Qualtrics was used to ensure that respondents completed all unanswered questions before ending the survey. Thus, the variables had no numeric missing data, and all values fell within the acceptable range of response options. Negatively worded items were reverse-coded and the items within each scale were summed and averaged. The composite variables were then examined for outliers, normality, and homogeneity of variances. The scores for each condition were normally distributed, as assessed by visual inspection of histograms and Normal Q-Q plots. The Non-significant Levene's tests indicated that variance of the dependent variables did not differ significantly between conditions (significance values ranged from .08 to .55).

Inspection of a boxplot revealed two outliers for attitudes toward greed (Z-scores of 2.81 and 3.13). These outliers were retained for two reasons. First, because they were less than 3 box-lengths away from the edge of the box, their departure was not extreme. Second, results from an independent *t*-test demonstrated no significant differences between mean scores with and without the outliers.

4.3.3 Reliability

Cronbach's alphas were used to examine the reliability of the scales, that is, how coherently the items are measuring the underlying construct. The internal consistency for the 7 unethical decision making items was somewhat acceptable ($\alpha = .69$). However, it is worth nothing that in scenario-based measures, coefficient alphas tend to underestimate internal reliability. That is, items in a psychometric instrument have common variance because of their underlying psychological construct, but each scenario item also includes unique variance associated with the situation.

The 6 items measuring attitudes toward greed had an unacceptable level of internal consistency, as determined by a Cronbach's alpha of .31. Three items had corrected item-total correlations of less than .3, suggesting that they did not correlate well with the overall score from the scale (e.g., Field, 2005). Thus, the 3 items were removed from subsequent analysis. They were: "To be a successful person in this society, it is important to make use of every opportunity," "It is not morally bad to think first of one's own benefit and not other people's," and "I like competition." After removal, the alpha of the 3-item scale increased considerably to an acceptable level ($\alpha = .67$).

4.3.4 Descriptive Statistics

Table 1 summarizes the means, standard deviations, and ranges for the study's variables: unethical decision making, attitudes toward greed, and the amount of candy taken. Bivariate correlations among these continuous variables were computed, and the results indicated no relations among them, all *p*s > .05. On average, participants took 0.69 (*SD* = .74, *range* = 0 – 3) piece of candy that would otherwise go to children. Approximately 52.1% took at least one candy (35% took one candy and 16.4% took two or more pieces of candy). No significant difference was found between the number of candy taken by men (*M* = .53, *SD* = .22) and women (*M* = .76, *SD* = .11).

Table 4.1

Descriptive Statistics for Continuous Variables by Experimental Conditions (*N* = 73)

Condition	Variables	Min	Max	*M*	*SD*
Non-luxury (*n* = 35)	Attitudes toward greed	1.00	5.67	2.58	1.17
	Unethical decision-making	1.86	5.86	3.86	0.98
	Candy taken	0.00	3.00	0.66	0.90
Luxury (*n* = 38)	Attitudes toward greed	1.33	6.00	2.91	0.86
	Unethical decision-making	1.71	6.29	4.11	1.03
	Candy taken	0.00	2.00	0.76	0.71

Note: The Attitudes toward Greed Scale was based on 3 items ($\alpha = .69$), with response options ranged from 1 "strongly disagree," to 7 "strongly agree", and the Unethical Decision Making Scale was based on 7 items, with response options ranged from 1 "not at all likely" to 7 "highly likely."

The mean for unethical decisions (*M* = 3.99, *SD* = 1.01, *range* = 1.71 – 6.29) was slightly above the midpoint (i.e., 3.5) of the scale rage. This suggests a trend toward unethical decisions, with reasonably high variability in participants' willingness to report that they would engage in unethical actions. Four out of 7 ethically charged scenarios were above the midpoint of the scale: looking at a copy of the final examination (*M* = 4.14, *SD* = 1.82), keeping $10 in extra change from a coffee shop (*M* = 4.58, *SD* = 2.11), saying nothing about receiving an incorrect higher exam grade (*M* = 5.51, *SD* = 1.64), and taking a software package without paying for it (*M* = 6.14, *SD* = 1.22). Among the 7 items, participants were least willing to copy a project from a previous class (*M* = 2.03, *SD* = 1.27).

As for attitudes toward greed, the mean (*M* = 2.75, *SD* = 1.04, *range* = 1.00 – 6.00) was slightly below the midpoint (3.5) of the scale that ranged from 1 (strongly disagree) to 7 (strongly agree), suggesting that, on average, participants had less favorable attitudes toward greed. Because the 3-item scale had somewhat acceptable reliability (α = .67), each of 6 attitude items was individually examined. Among them, participants were more likely to adopt the beliefs that being successful requires making use of every opportunity (*M* = 5.42, *SD* = 1.19), that they like competition (*M* = 4.64, *SD* = 1.36), and that it is not morally bad to think of their own benefit and not other people's (*M* = 4.03, *SD* = 1.33). Participants were least likely to report that they would exploit other people to further their own self-interest (*M* = 2.47, *SD* = 1.43). Males (*M* = .01, *SD* = .70) and females (*M* = .17, *SD* = .71) did not significantly differ in their scores, $t(78) = .-.97$, $p = .33$, but older participants tended to report less favorable attitudes toward greed, $r(73) = -.28$, $p < .05$.

4.3.5 Luxury and Unethical Tendencies

The first question for study 3 was whether exposure to luxury would increase favorable attitudes toward greed. The means for the two priming conditions were not significantly different (for luxury, $M = 2.91$, $SD = .88$, and for non-luxury, $M = 2.58$, $SD = 1.17$, $p > .05$). The second question was that whether exposure to luxury primes would affect the tendency to make unethical decisions, an independent-samples t-test was conducted to determine if there were differences in unethical decisions between luxury and non-luxury conditions. Although participants exposed to luxury primes made more unethical decisions ($M = 4.11$, $SD = 1.03$) than participants exposed to non-luxury primes ($M = 3.85$, $SD = .98$), this difference was not significant, $M = -.26$, 95% CI [-0.72, 0.21], $t(71) = .36$, $p = .55$. These null results suggest that exposure to luxury did not increase positive attitudes toward greed nor increase unethical decision makings.

Because the 7 scenarios may represent violation to different ethical principles, such as justice and virtue, each scenario was individually examined. Only the means of the "keeping extra change in Starbucks" were significantly differed between conditions: Participants exposed to luxury primes were more likely to report that they would keep the extra change ($M = 5.05$, $SD = 1.96$) than participants exposed to non-luxury primes ($M = 4.06$ $SD = 2.17$), $t(71) = -2.06$, $p < .05$. Means and standard deviations of each unethical decision-making scenario are displayed in Figure 4.1.

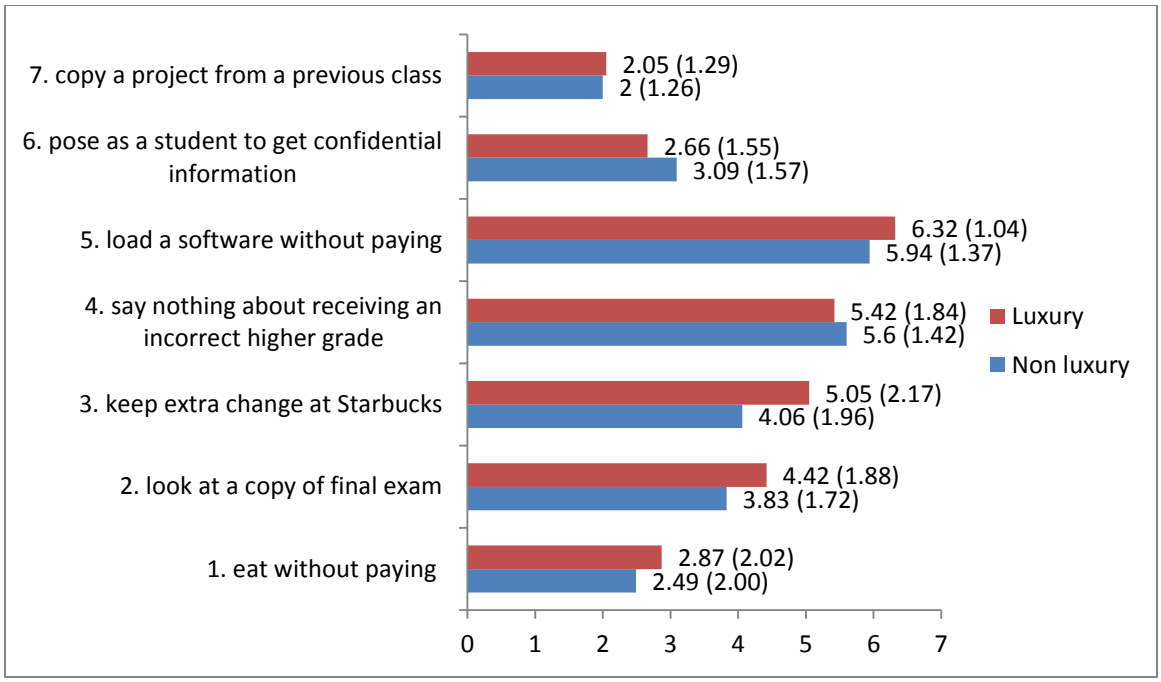

Figure 4.1. Means (standard deviations) of the 7 unethical decision-making scenarios by experimental conditions.

The third question was whether exposure to luxury primes would affect unethical behaviour, assessed by the number of candy taken from a jar designated to children. To assess this, an independent-samples *t*-test was conducted with the number of candy taken as the dependent variable. Visual inspection of a boxplot revealed two outliers (Z-scores of 2.83) in this variable. To reduce their influence, they were reduced to the next largest value. The assumption of homogeneity of variances was met, as assessed by Levene's test for equality of variances (p = .32). The dependent variable was normally distributed for non-luxury condition, with a skewness of 0.854 (*SE* = .398) and kurtosis of -.76 (*SE* = .778), and for non-luxury condition, with a skewness of .385 (*SE* = .383) and kurtosis of -.915 (SE = .750). Participants in the luxury condition took more candy that would otherwise go to children (M = .66, SD = .15), compared to

participants in the non-luxury condition (M = .76, SD = .71), but this difference was not statistically significant, $t(71) = -.56$, $p > .05$.

To verify whether exposure to luxury was associated with taking candy, the dependent variable was dummy coded (1 = taking one or more candy and 0 = taking no candy). A chi-square test of independence was performed to examine the relation between priming condition and the dummy variable. All expected cell frequencies were greater than five. The relation between priming and taking candy was not significant, $\chi^2(1) = 2.28$, $p = .16$.

4.3 Discussion

In the present study I tested whether luxury, which has shown to increase the tendency to make self-interested decisions, might cause people to make unethical decisions or engage in unethical behaviour that could potentially inflict harms to others. Previous study (Chau & Zou, 2009) has shown that luxury-primed individuals were more likely to think about themselves, but were not prone to have anti-social cognitions. Chau and Zou (2009) employed a word-recognition test and found that luxury-primed participants were not more likely to identify anti-social words than pro-social words in a series of scrambled letters. The present study extended these findings with objective assessment of unethical behaviour and self-report tendencies toward unethical decisions. Thus, it provides the first empirical evidence that luxury cannot induce people to behave in ways that breach accepted moral norms or standards of behaviour.

4.3.1 The Effects of Luxury on Attitudes toward Greed

The study examined whether exposure to luxury would increase positive attitudes toward greed. The results were non-significant but trended in the direction that participants exposed to luxury hold more positive attitude toward greed. Thus, the effects of luxury to enhance favorable

attitudes toward greed appear to be limited. One possible explanation is that the attitude scale employed in the present study appears to measure the egoistic inclination to free ride, or the desire for more than is needed or deserved, even by exploiting others. The items "jeopardize the public welfare" and "exploit other people" all tap into attitudes about how one should risk others in the pursuit of self-interest. Luxury may cause people to focus on their own benefits, but it does not appear to cause intended misfortune to others.

Another possibility is that the scale appears to assess generic attitudes toward greed, focusing on overall personal benefits or comparative advantages, but is less well adapted to specific, inordinate desire for personal pleasure and hedonic experiences. Additional research may investigate the effects of luxury on attitudes toward hedonism and the pursuit of pleasure. At this exploratory stage, the items in the Attitudes toward Greed Scale may be poorly written, demonstrating low internal inconsistency and correlation with other constructs, or that additional dimension (e.g., hedonism) of greed was missing.

4.3.2 The Effects of Luxury on Unethical Decisions

Exposure to luxury did not increase the tendency to make everyday morally objectionable decisions. Why is luxury unrelated to immorality? As mentioned, morality concerns about harm or unfair treatment towards other individuals or community. Self-gratification, possibly activated by the concept of luxury, may be distinctive from the perception of justice and right, or how one ought to relate, treat, or respect other individuals.

Interestingly, among the 7 hypothetical scenarios, only the decisions participants made in the "keeping the extra change at Starbucks" scenario were significantly different between conditions. Specifically, participants exposed to luxury were more likely to report that they would keep the extra change not rightfully belong to them than participants exposed to non-

luxury. I speculate that this scenario is most directed to potential pecuniary gain, whereas the other scenarios mainly focus on daily misbehaviors, such as lying and cheating. Importantly, keeping the extra change is tempting and immediately gratifying, but doing so involves harm to the cashier, who would be required to pay any amount of shortage from her own pocket. In fact, a unique feature in Study 3 is the investigation of (direct or indirect) harm to others. In Study 1 and 2, participants either selected between certain distributions of resources, or decided how many units of resource to take from an existing pool. Essentially, no real losses or harm was induced to others. Even when participants took everything for themselves, the "others" did not lose more than what they had before they arrived at the studies.

4.3.3 The Effects of Luxury on Unethical Behavior

The present study utilized an unethical behavioral measure—by taking as many pieces of candy as one desire from a bowl of Halloween candy designated for children in the nearby laboratory. Exposure to luxury did not increase participants' tendency to take more candy intended for children. This finding raises several important considerations. First, although this result was non-significant, it trended that luxury-primed participants took more candy. It should be acknowledge that nonsignficant results could potentially result from the use of a narrow single behavioral outcome. Nevertheless, future studies should explore the effects of luxury on a variety of other unethical behaviors.

Second, one may question whether taking candy designated for children would constitute an unethical behaviour. The post-study validation exercise I conducted revealed that most respondents, with a variety of self-reported age groups and ethnicities, considered taking candy away from children as unethical. Importantly, the focus of this measure is not so much about how desirable the resource is to the participants, but the propensity to engage in unethical

behaviour. That is, the main question is, when participants were given an opportunity, how likely were the participants willing to take away goods that do not belong to them but are valuable to a vulnerable population. To validate, future research could compare how much valuable resources would be taken away from adults versus children.

Third, the present finding is contrary to previous studies (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004; Piff, Stancato, Côté, Mendoza-Dentona, & Keltner, 2012) demonstrating that individuals with higher psychological entitlement or have higher social class experience were more likely to take candy designated for children. Therefore, it is possible that exposure to luxury does not necessarily activate a sense of superiority nor induces an unrealistic expectation that one is deserve of rewards or special treatments over others.

4.3.4 Limitations

Despite the contribution of this study to the understanding of luxury exposure and unethical tendency, the findings should be interpreted within the confines of some possible limitations. First, inevitable in a self-report scenario-based measure, participants did not actually endorse unethical decisions that would benefit themselves or harm others. However, because participants indicated that they carefully followed the instructions to vividly imagine themselves in each hypothetical situation, they were at least expected to take perspectives of the protagonists. Moreover, because the scenarios instantiate familiar situations commonly arise in everyday life, participants could easily relate to them and make accurate report of their decisions.

Second, a common concern with self-report ethics measure is the issue of social desirability bias, that is, the distortion of information that results from the basic tendency to project a favorable image. Randall and Fernandes (1991) recommended complete anonymity to reduce social desirability effects. Prior to the study, participants were assured that they would not

be individually evaluated, because their responses would be anonymously submitted via the Internet. They were also informed that data would be analyzed in aggregated numerical format, and that confidentiality would be strictly protected. Further, the present results indicated a trend toward unethical decision-making tendencies. My reasoning is that, if social desirability inhibited truthful responses, this finding should be attenuated. Nevertheless, a measure of social desirability bias should be considered in future studies.

4.3.5 Future Directions

This study is among the first to examine the effects of luxury on unethical tendency, and thus, sets the stage for further inquiries. Importantly, the present results indicate that luxury was most likely to cause people to make unethical decisions that involve money, but not other everyday unethical decisions. Thus, future work should employ controlled and field experiments to investigate whether similar effects occur in other intentional delinquent acts typically exist in the financial domains, such as stealing, corruption, and fraud. For example, in most studies that investigate stealing, participants were given an opportunity to steal or dishonestly claim money that the owner was either unknown or absent (e.g., Bickman, 1971; Feldman, 1968; Korte & Kerr, 1975). Such behavioural methods can further validate the present results by permitting unambiguous conclusions about the influence of luxury on financial dishonesty.

Another important question remains is whether individuals differ in their susceptibility to the effects of luxury and their tendency to engage in various unethical actions. Moral attitudes, internalization of virtues and religion, as well as depositional antecedents, such as empathy and self-control, may dampen or strengthen the effects of luxury on unethical tendencies. For example, empathy was defined as heightened sensitivity to take perspectives of others and to experience their emotional distress (see Batson, et al., 1989; Eisenberg & Miller, 1987).

Vicarious empathetic experience may diminish unethical tendency through felt responsibility and increased concern for the needs of others (Bok, 1998). On the other hand, people with weaker moral identity (i.e., weaker moral characters and standards as part of their self-concepts) are less likely to be concerned with others and, in turn, are more likely to engage in unethical behaviours (Aquino, & Reed, 2002; Shao, Aquino, & Freeman, 2008).

4.3.6 Conclusion

With recent alarming press about CEOs ethics violations, corruptions in politics, and scandals in religious institutions, concerns for these moral transgressions are pressing (Etzioni, 2002). Why do some highly paid executives and managers abuse the power of their positions with dishonesty, stealing, and other unethical dealings, while ignoring the plights of others? The present study presents quantitative evidence that exposure to luxury does not necessarily induce harm towards other, although it can potentially cause people to dishonestly keep money that do not belong to them. This may explain why some top-level corporate executives, who are often surrounded by luxuries, financial rewards, and other perverse incentives, tend to prioritize their self-interests over others' welfare and to engage in decisions with relatively lack of business ethics and moral standards. Clearly, much remains to be understood about the psychological mechanisms of exposure to luxury as well as individual differences and the consequences to other unethical behaviours. However, this study provides a fruitful starting point, and its results suggest the potential value of further efforts to design interventions that would counter the negative effects of luxury.

CHAPTER 5

General Discussion

Although the concept of luxury is subjective to personal experience and individual interpretations, most scholars recognize that luxury is accompanied by pleasure and indulgence of senses though objects and experiences that are more than necessary (e.g., Chitturi, Raghunathan, & Mahajan, 2008; Hagtvedty, & Patrick, 2009). With the escalating growth of luxury industry, ubiquitous presence of advertising and product placements in modern consumerist society, as well as frequent references to wealth and luxury lifestyles in popular music and film industry, what are the psychological consequences of individuals heavily exposed to luxury?

One compelling answer comes from Gandhi, who warns the danger of self-indulgence on luxury: "a certain degree of physical harmony and comfort is necessary…but above a certain level it becomes a hindrance rather than a help" (Tendulkar, 1961, p.88). In this dissertation, a series of rigorous experimental tests were conducted to pursue the conjecture on and to determine the causal nature of luxury and self-interest. Some of the key conceptual, definitional, and moral issues arising in the analysis of luxury are also addressed.

The primary objective for this dissertation is to examine the role of the construct of luxury on three social dimensions: social preferences (study 1), cooperative behaviour (study 2), and unethical tendency (study 3). Study 1 provides preliminary evidence that heightening the accessibility of the luxury construct (via a prime) subconsciously prompt the weight or concern a person attaches to own payoff relative to the payoff of another person in a decomposed game and a modified dictator game. Study 2 and 3 provides additional evidences on the magnitude of this effect. Study 2 allows the investigation of such effects in an iterated, multi-player ocean-fishing

commons dilemma context. Exposure to luxury causes defection in a few harvesters to prematurely exhaust the resource pool through rapid, heavy, short-term, self-interested, and noncooperative harvesting. Finally, Study 3 demonstrates that exposure to luxury may cause individuals to exhibit unethical decision-making tendencies to unrightfully taking money not belong to themselves, but it does not induce unethical tendency in other domains.

5.1 Theoretical Implications

The studies, taken together, provide three important insights regarding the psychological and behavioral effects of luxury and its symbolic representation, each with theoretical implications that are potentially plowing new ground. First, as noted earlier, social value orientation is commonly theorized as stable, fundamental trait-like other-regarding preferences, yet what is arguably intriguing is that the subtle exposure of luxury can influence these interpersonal orientations without conscious awareness, suggesting malleability of this personality construct. Thus, it appears somewhat odd that the lion's share of SVO literature is devoted to examining SVO as a personality determinant of cooperation, strategies, and other outcomes (e.g., Kollock, 1998; McClintock & Van Avermaet, 1982), while its stability has been challenged in studies demonstrating that social preferences are prone to decision framing (De Dreu & McCusker, 1997) and bogus pipeline procedure (Iedema & Poppe, 1994). Furthermore, comparisons between SVO and other well-established personality traits, such as the Big Five, are largely unknown. One possible reason for this lacuna in SVO research is that nonsignificant findings are generally unpublished (Bogaert, Boone, & Declerck, 2008). It is reasonable, therefore, to suggest that social values may be conceptualized as states, sensitive to contextual cues (reviewed in Johnson, Maruyama, Johnson, Nelson, & Skon, 1981), and an adequate predictor of cooperation, rather than a general indicator of stable personality characteristic.

Second, the nature of self-interest should be critically distinguished between Study 1 and Study 2, because they pertain to the degree that self-interest is related to social influences. Study 1 empirically verifies that the mere presence of luxury signals proself tendency in one-shot resource allocation tasks in which an individual, who has substantial influence on another person, makes nonstrategic decisions under certainty and free of possible repercussion and reprisals. On the other hand, Study 2 examines defection in a commons dilemma context, in which multiple harvesters, with repeated interaction over multiple trials, make complex decisions and timely responses. Such decisions require consideration on future own outcome, collective consequences, as well as expectations regarding the motives and behaviours of the interdependent party. Thus, luxury may decrease generalized concern for others in neutral situations, whereas self-interest is less pronounced in exchange situations.

The importance of this finding is that strategic fairness or cooperation in a commons dilemma can potentially enhance long-term personal benefits. In this case, proselfs with their natural inclination to pursuit self-interest can be induced to restrain their harvests because cooperation is strategically an optimal choice over mutual defection. For example, Kuhlman and Marshello (1975) found that, in a Prisoner's Dilemma Game, players with individualistic orientation elicited remarkable cooperation when confronted with a partner adopting a cooperative tit-for-tat strategy (i.e., following a course of action which is consistent with their opponent's previous turn). This finding has resolved theoretical confusion and insignificant findings in thousands of studies showing considerable levels of cooperation in social dilemmas. As McClintock and Liebrand (1988) put it, "Kuhlman and Marshello demonstrated that what appeared as irrational choice behaviors in a Prisoner's Dilemma were in fact [economic] rational" (p. 396).

Similarly, in my study, with feedback information about own and others' harvests as well as the opportunity for interaction, exploration, and experimentation with a possible set of actions over several trials, individuals may eventually calculate that cooperation is the most stable strategy, which yields larger long-term profits then immediate rewards by single defective act. Reciprocal cooperation is the mechanisms driving the evolution of human cooperation, regardless of underlying selfish concerns (Axelrod & Hamilton, 1981). On the basis of arguments presented above, I deduce that exposure to luxury-related stimuli may increase self-interest, but such tendency is less likely to be exhibited with extraneous influences (e.g., expectation regarding motives of others) and when incentives to cooperate are align with self-interested goals.

Finally, one of the most important conclusions that can be drawn from this dissertation is the critical role of contextual cues (e.g., luxury objects) in shaping self-interest. One ultimate goal for this dissertation is to integrate previous findings into an overarching conceptual framework that attempts to unravel why people engage in self-interested behaviours. The comprehensive model of social dilemmas, proposed by Gifford (2008), is an inclusive framework that summaries and organizes many influences on and outcomes of social dilemmas. The model, in the context of resource and public goods, describes five major categories of antecedent influences as well as relations among them: Geophysical influences, decision-maker influences, interpersonal influences, governance influences, and dilemma awareness. It is my hope to extend the model by considering environmental stimuli processed outside of conscious awareness but have important interpretive or evaluative consequences on subsequent judgments and behaviour. This hypothetical sixth category would be labeled as "subtle influences" which includes unconscious, automatic influences on harvest decisions. This category should be

distinguished from decisions guided by deliberate consideration of goals and strategies as well as awareness of feedback structures and clear social expectations (see Figure 5.1).

This "subtle influence" category not only consists of subtle and subliminal contextual cues, such as implicitly presented luxury objects, but also psychological framing, heuristic processing rules, habits, and cognitive and affective states . For example, one important component of automatic influence that has recently received prominent attention in the social dilemmas literature is affect. The relation between affect and cooperation appears less straightforward and conclusive than often assumed. Positive mood was found to encourage cooperative behaviour (e.g., Isen & Baron, 191; Oatley, & Jenkins, 1996) but other studies reported mixed evidence (e.g., Hertel & Fiedler, 1994; Tan & Forgas, 2010). Interestingly, cooperation was linked to a range of negative emotions, including guilt (Nelissen, Dijker, & De Vries, 2007), envy (Parks, Rumble, & Posey, 2002), shame (e.g., De Hooge, Breugelmans, Zeelenberg, 2008), regret (Martinez, Zeelenberg, & Rijsman, 2011), and anger (e.g., Wubben, De Cremer, & Van Dijk, 2009). In short, although the conceptual category of nonconscious influences requires further empirical testing, the studies cited so far corroborate its plausibility and its inclusion in the general model would provide richer picture of complex influences and psychological processes that influence social behaviour.

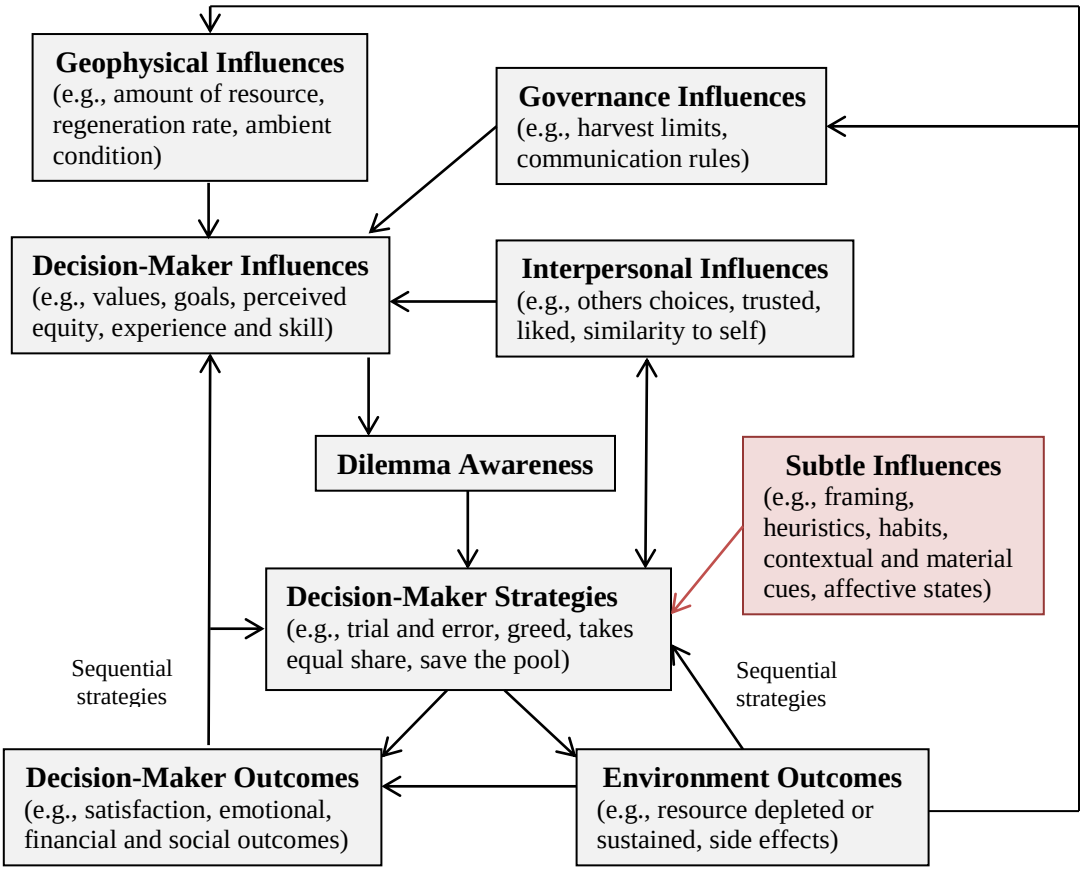

Figure 5.1. The comprehensive model of social dilemmas (Gifford, 2008)

5.2 Methodological Implications

In a voluminous, robust literature on social value orientation and commons dilemma, the number of studies specifically addressing measurement issues is relatively small. As noted, theory development is necessarily in a process-based, synthetic direction with method construction (Gigerenzer, 1991; Gigerenzer & Sturm, 2007). By assessing SVO as a dependent variable at a ratio level, my study suggests that social preferences are theoretically richer, less arbitrary (no unclassifiable individuals), and more prone to manipulations than currently assumed.

Significant advancement has been made on an admirable list of psychological and structural influences on cooperation in social dilemmas. This has fostered, on the whole, growing interests in integrating influences as well as constructing overarching theoretical models and paradigms that closely approximately real-world social dilemmas. Simulation-based microworlds, with their complex and dynamic properties, enable systematic investigation on a plethora of factors, provide a variety of assessments on cooperation, and offer both psychological and ecological realism (Chen & Bell, in press). Furthermore, I recommend the conjunction of methodological and theoretical paradigms with other disciplines, such as anthropology, experimental economists, mathematics, and organization behaviour. Such integrations may bring diversity and fresh perspectives into the investigation of social behaviour.

5.3 Practical Implications

Most people were outraged by the news of corporation scandals and tales of overpaid executives who unduly enrich themselves at the expense of shareholders. For example, on November 2001, Enron Corporation, an American electricity company, admitted to employ accounting practices that deceitfully inflated its revenue by $586 million, with investors' total loss of more than $60 billion (Thomas, 2002). The Enron scandal was considered one of the most notorious white crimes in American history, but the list of recent corporation scandals appear to be expanding (e.g., Tyco International, Martha Stewart, Nortel, Qwest Communications, WorldCom). This has raised serious concerns about the motives and standard of ethics behind corporation scandals (Kaufmann, 2005). One commonly proffered explanation is the lack of moral conscience. However, the present dissertation offers an alternative explanation: the subtle reminders of luxuries typically presented in corporation settings and upscale office facilities,

where negotiations and distribution decisions are made, may automatically induce one to focus on personal desires and serve as a prompt for self-serving actions.

Beyond corporation context, could the prevalence of luxury and money in modern societies possibly affect every day judgments and social behaviours? An impressive number of studies have established substantial ecological validity on social preferences in several real-life mixed-motive situations, including willingness to volunteer for psychology research, to donate, and to help the poor (e.g., McClintock & Allison, 1989), responsible organizational behaviour (Nauta, De Dreu, & Van der Vaart, 2002), pro-environmental behaviour (e.g., Joireman, Lasane, Bennett, Richards, & Solaimani, 2001), commuting decisions (Van Vugt, Meertens, & Van Lange, 1995), self-control and forgiveness (Balliet, Li, & Joireman, 2011), and interpersonal synchrony (Lumsden, Miles, Richardson, Smith, & Macre, 2012). This line of research may serve as an inspiration for future research addressing, beyond experimental game behaviours, the relationship between social preferences and environmental material cues in a range of everyday interdependent circumstances.

On a larger scale, endless parade of desirable commodities presented in contemporary postindustrial societies can possibly evoke individual self-enhancement tendencies that, collectively, may have undesirable consequences on global and environmental issues. Climate change is one instance of commons dilemma (Pfeiffer & Nowak, 2006). According to the Worldwatch Institute (2004), the U.S. represents less than 5% of the global population, but it consumes one-quarter of the world's fossil fuel resources, had more privately-owned vehicles than licensed drives, and had new homes built approximate 40% bigger than homes built in 1975, despite smaller average household sizes. These illustrate taking more than fair share of a limited resource and may reasonably document the adverse effects of materialism and

increasingly luxury-saturated marketplaces. In support of this account, one study demonstrated that exposure to luxury cues not only triggered situational materialism closely related to dispositional materialism, but also diminished feelings of personal responsibility in a water conservation dilemma (Bauer, Wilkie, Kim, & Bodenhausen, 2012).

5.4 Limitations and Future Directions

Several limitations of this initial attempt to assess the implicit link of luxury and self-interest are noteworthy, because they may provide some insights to future research directions. First, across the three studies, the use of undergraduate students as participants raises concerns about inferences of generalizability (Henrich, Heine, & Norenzayan, 2010). Although the use of convenient student sample is common in behavioral science research, controversy revolves around how warrant is it to draw inferences about human nature from a sample that is predominately Western, educated, and young adults. Sears (1986) expressed caution about the representativeness of this "narrow data base" because university students tend to have certain qualities distinctive from non-student population, such as more compliant behaviours, higher cognitive skills, and less crystalized attitudes and self-identities. However, others (e.g., Mook, 1983; Pernice, van der Veer, Ommundsen, & Larsen, 2008) have argued that student samples are appropriate for research that focuses on fundamental theoretical testing. I believe that students are qualified participants in my studies given that the research emphasis is on basic psychological processes, independent of sample's demographic characteristics, and that the carefully controlled experimental designs utilized in the studies rendered conclusive evidence on the implicit link of luxury and self-interest. Nonetheless, an important direction for future research would be to explore whether the same effects occur among diverse samples.

Second, all of the present studies were conducted in the controlled setting of a laboratory. The extent to which similar priming effects could be demonstrated in other important business, social, retail, or organizational domain is thus another question of considerable theoretical and applied interest. Undoubtedly, context antecedents are likely to be important predictors of social behaviours. For example, will shoppers surrounded by advertisements of luxuries and images of indulgence, with their promise of pleasure, ability to delight, and hedonic potential, less motivated to make generous donations for charity? Future studies that address the types of contexts that may be particular susceptible, or particularly immune, to such influences would demonstrate the range of the present phenomena.

Third, the present studies employed luxury-related images, such as photos of lavish yachts and expensive vehicles, instead of the opportunity to experience real luxury objects. One may argue that visual images cannot evoke powerful hedonic feelings and exquisite sensual and emotional indulgence inherent in actual experiences accompanied with luxury. However, the conceptual and perceptual representations of the images provide conservative test to my thesis: If the link between luxury and self-interest can be established without direct experience, the actual impact of luxury goods would be more pronounced. Nevertheless, future work should extend the primes to actual luxury material objects, to be presented in different modes (e.g., TV commercials), and to be situated in direct experiences (e.g., luxurious research settings).

Fourth, although this dissertation advances the knowledge about the mere exposure effects of luxury goods, much remain to be understood the automatic mechanisms through which luxury goods activate self-interest. Although I argue that luxury goods may directly increase personal desire and the focus of self-benefits, an alternative explanation may be that exposure to luxury goods changes how one construe the situation (i.e., activation on the social norm of

competiveness, or the appropriateness of pursuing self-interest). For example, previous studies have demonstrated that exposure to economic models increased defection rates in a social dilemma game (Frank, Gilovich, & Regan, 1993) and that labeling a Prisoner's Dilemma Game as "Wall Street Game" decreased cooperation than labeling the game as "Community Game" (Ross & Ward, 1995). Thus, it is possible that luxury primes trigger a business decision frame or endorsement of free-market capitalism in particular. Thus, how the situation is construed and what kind of situation come to mind is an important adjunct to the present research.

Finally, one important extension of the present study would be to examine the neurological mechanisms associated with exposure to luxury. In a study using functional neuroimaging, strong impulses and giving into temptation were associated with greater activity in the nucleus accumbens (NAcc), while successful self-control exertion was associated with greater activity in inferior frontal gyrus (Lopez, Hofmann, Wagner, Kelley, & Heatherton, 2014). Along this line, if luxury is associated with personal indulgence, the neural mechanisms underlying desire and reward systems would be heightened.

5.5 Conclusion

An impressive array of research, drawing from multiple disciplines, has attempted to investigate the fundamental question of whether human behaviour is solely guided by own material wellbeing or at least some other-regarding considerations. In psychology, hundreds of experiments have conducted to determine what factors influence individual cooperation, even when decision makers are trapped in the logic of the commons. The present dissertation contributes to this line of research by considering the mere presence of material objects and their implicit messages about self-interest and personal indulgence, rather than perception of self and others traditionally investigated in mainstream psychology research. In addition, I have uniquely

integrated psychology's priming technique to examine cognitive representations and processes, behavioural economics' use of gaming techniques to test rational self-interest, as well as anthropology's emphasis on artifacts as a mean for retrospectively understanding human cultures.

It should be noted, however, that the trend I document in the current investigation may have possible cultural exceptions. Individuals in some European counties, such as France, Italy, and German, appear to have less favorable self-reported attitudes toward modern luxuries than the US and other emerging countries, such as China and Russia (Kapferer & Bastien, 2012). One possible reason is that in Catholic countries, notions of charity, non-ostentation (wealth must be hidden), and the control of one's desire are highly preached principles. A more appealing explanation is that for French and Italians, old luxuries, which symbolize connoisseurship, aesthetic appreciation, cultural identity and heritage, may be diluted with overexposure, mass production, and delocalization of modern luxuries (Aiello, et al., 2010; Hennigs et al., 2012). Although it is beyond the scope of this dissertation to address cultural differences in luxury perception, cross-cultural experimental research might serve as an inspiration for future studies.

The present dissertation offers important insights to set the stage for negotiations, business decisions, and resource allocations free of competitive orientation and unfair distributions. Although luxuries cannot be completely eliminated in ubiquitously consumerist and hedonistic-oriented societies, being aware of the potential influences from environmental cues is the first step towards fortifying ethical infrastructures and eliminating the negative consequences associated with luxuries. Hopefully made clear in the present dissertation are the values of considering material properties that is often subtly embedded in everyday

circumstances, the potential of fostering more beneficial dialogues between psychologists and anthropologists, and the insights into a number of exciting future research directions.

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Appendices

Appendix A: Sample Luxury and Non-Luxury Primes for Study 1

Sustenance category:

Luxury

Non-luxury

Clothing category:

Luxury

Non-luxury

Shelter category:

Luxury

Non-luxury

Travel/entertaining category:

Luxury

Non-luxury

Appendix B: The Social Value Orientation Slider Measure

(Murphy, Ackermann, & Handgraaf, 2011)

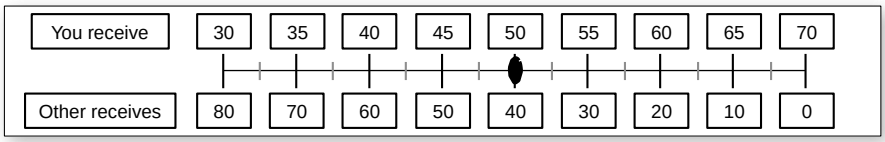
Instructions

In this task you have been randomly paired with another person, whom we will refer to as the **other**. This other person is someone you do not know and will remain mutually anonymous. All of your choices are completely confidential. You will be making a series of decisions about allocating resources between you and this other person. For each of the following questions, please indicate the distribution you prefer most by **marking the respective position along the midline**. You can only make one mark for each question.

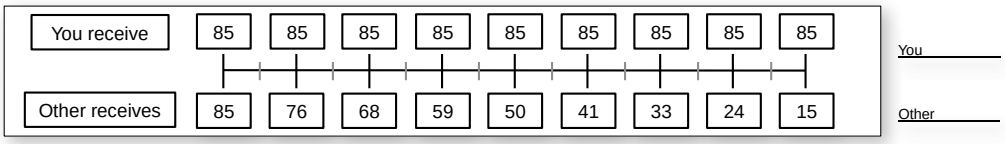
Your decisions will yield money for both yourself and the other person. In the example below, a person has chosen to distribute money so that he/she receives 50 dollars, while the anonymous other person receives 40 dollars.

There are no right or wrong answers, this is all about personal preferences. After you have made your decision, **write the resulting distribution of money on the spaces on the right**. As you can see, your choices will influence both the amount of money you receive as well as the amount of money the other receives.

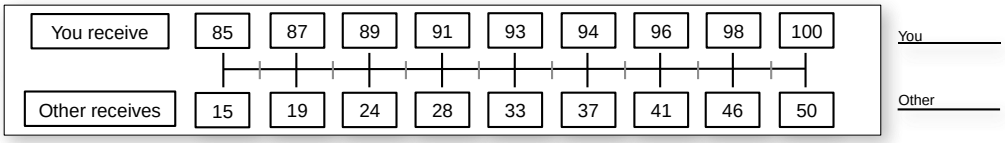
Example:



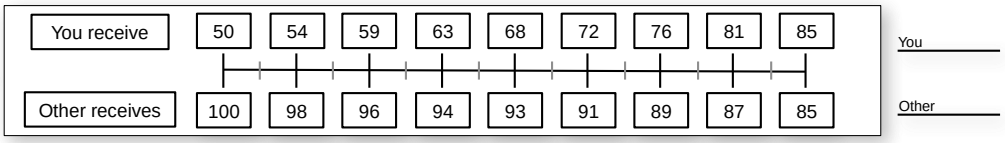
1



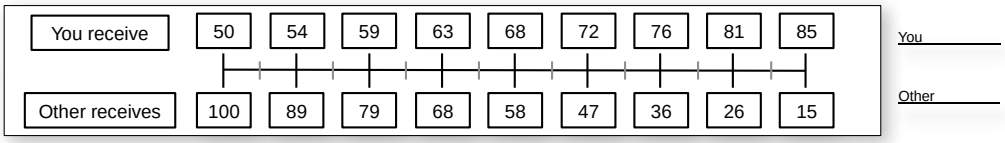
2



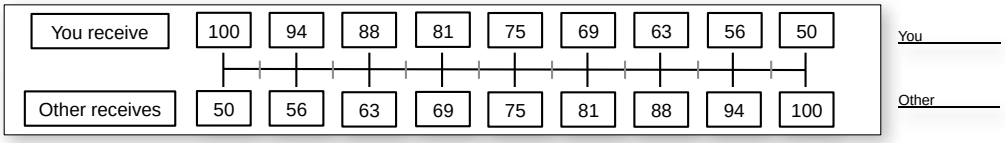
3



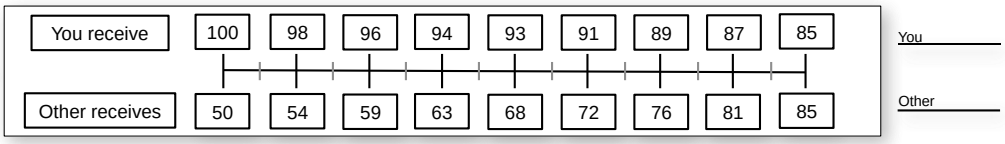
4



5



6



Appendix C: SVO angle Calculation

SVO angle calculation:

1. Calculate the mean of the payoffs a participant allocated to herself across the six items ($\bar{A}_p$).
2. Calculate the mean of the payoffs a participant allocated to the other person across the six items ($\bar{A}_o$).
3. Subtract 50 from both means: $\bar{A}_{\mathrm{p}} - 50$ and $\bar{A}_{\mathrm{o}} - 50$
4. Calculate the inverse tangent of the proportion between the mean of the payoffs allocated to the other minus 50 and the mean of the payoffs allocated to the self minus 50:

$$\mathrm{SVO}^{\circ} = \arctan\left(\frac{(\bar{A}_{\mathrm{o}} - 50)}{(\bar{A}_{\mathrm{p}} - 50)}\right)$$

5. Categorize participants according to the following scheme:
    a. Altruism: SVO˚ > 57.15˚
    b. Prosociality: 22.45˚ < SVO˚< 57.15˚
    c. Individualism: -12.04˚< SVO˚< 22.45˚
    d. Competiveness: SVO˚< -12.04

For example, if a participant would choose the option which maximizes the other one's payoff in each of the six items, the resulting angle would be 61.39˚, indicating perfect altruism (see tables below). Likewise, if a person would choose the option which maximizes the difference between the own and the other one's payoff in each of the six items, the resulting angle would be -16.26, indicating perfect competitiveness.

Derivation of the SVO angle that would result if a person would consistently choose the altruistic options:

	Endpoint 1		Endpoint 2		Altruistic choice	
Item	Self	Other	Self	Other	Self	Other
1	85	85	85	15	85	85
2	85	15	100	50	100	50
3	50	100	85	85	50	100
4	50	100	85	15	50	100
5	100	50	50	100	50	100
6	100	50	85	85	85	85
Resulting means:					70	86.7
Resulting means – 50:					20	36.7
Resulting angle:					61.39˚	

Derivation of the SVO angle that would result if a person would consistently choose the competitive options:

	Endpoint 1		Endpoint 2		Competitive choice	
Item	Self	Other	Self	Other	Self	Other
1	85	85	85	15	85	15
2	85	15	100	50	85	15
3	50	100	85	85	85	85
4	50	100	85	15	85	15
5	100	50	50	100	100	50
6	100	50	85	85	100	50
Resulting means:					90	38.3
Resulting means – 50:					40	-11.7
Resulting angle:					-16.26˚	

Appendix D: The Psychological Barriers to Cooperation Scale

Chen & Gifford (in press)

INSTRUCTION: Here are some reasons people have given for not being more cooperative. For each one, please answer how much that reason applies to your decision in the microworld today. Please indicate your level of agreement by writing an "x" under the appropriate number. There are no wrong or right answers!

		Strongly disagree 1	2	3	4	Strongly agree 5
1	I didn't think that taking a bunch of fish would really harm the supply.					
2	For me to cooperate would put me at a disadvantage.					
3	I doubted that restraining my harvesting would make any important difference to the fish stock.					
4	I have always been a competitive person; it's hard to change who I am.					
5	The chance to earn a bit of money today was more important than maintaining a supply of fish.					
6	I was unaware that a limited fish supply was really a problem.					
7	I simply didn't trust the other fishers.					
8	Earning some money seemed more relevant in this situation than maintaining a supply of fish.					
9	I didn't think that one person, me, could make much difference to the fish stock.					
10	I would have cooperated more, but I hate being pushed into it.					
11	I thought of myself more as an individual than as a member of this group of fishers.					
12	Honestly, I did not think that taking more fish than others was a problem for fish supply.					
13	As a generally competitive person, it was difficult to change my pattern of behaviour.					
14	In this situation, at least, taking more fish was appropriate.					

Appendix E: Instructional Messages that Appear in FISH 4.0

Introduction Message

(The message appears before the session begins)
FISH simulates fishing in an ocean. You and the 3 other participants will be fishing from the same ocean. At the beginning, 80 fish will be displayed on the screen. Once the simulation begins, you and the other fishers may catch as many of these fish as you like. Once you have taken as many fish as you want, you return to port with your catches, and the first season ends. The remaining fish will spawn for the next season (if no fish are left, they cannot spawn). For every fish left at the end of one season, two fish will be available to be caught in the next season. However, because the ocean can support only so many fish, the total number of fish will never exceed the original number of fish. Fishing can go on this way for many seasons, but all fishing permanently ceases any time that all the fish are caught.

You can make money fishing. You will be paid $0.10 for every fish you catch. Your job is to consider all these factors, and the other fishers, and make your own decisions about how to fish. Fish however you wish.

Please ask if anything is unclear. We want you to fully understand the rules before you start fishing. If you are sure you understand all the above, you are ready to fish. Click on the Go Fishing button on the right when you are ready. Once all the fishers have clicked this button, the first season will begin. (You may have to wait briefly for all the others fishers to click the button.)

End of Simulation Messages

(This message appears when all seasons are run)
Seasons come and seasons go, but for now we are done.

(This message appears when all fish are caught)
All the fish are now gone.

Appendix F: Measure of Attitudes toward Greed

(Yamagishi & Sato, 1986)

Respond to each statement by clicking the appropriate number to indicate how much you agree or disagree. There are no wrong or right answers!

		Strongly disagree						Strongly agree
		1	**2**	**3**	**4**	**5**	**6**	**7**
1	To be a successful person in this society, it is important to make use of every opportunity.							
2	It is not morally bad to think first of one's own benefit and not other people's.							
3	One should be concerned with the benefit to the group as a whole rather than with one's own benefit*.							
4	An individual's pursuit of self-interest should be allowed only insofar as it will not jeopardize the public welfare*.							
5	I like competition.							
6	It is very disgusting to exploit other people to further one's own self-interest*.							

*Reverse-scored.

Appendix G: Measure of Unethical Decision-Making

(Detert, Treviño, Sweitzer, 2008)

In this task, you will read several short descriptions of different situations. For each situation, please imagine as vividly as you can that you are in this situation. So, imagine for every situation that you act out the behaviors described. For each situation, you have to indicate how likely is it that you would engage in the behaviors described. It is very important to be able to picture yourself in a certain situation.

When you are able to imagine that you are in a certain situation, you are also able to predict what you would do and what you would not do if you were in such a situation. Being able to make such predictions for yourself is very important. Now, try to imagine that you are in the situations that will be described, and indicate for each situation how likely it is that you would behave in that way. There are no correct answers, as people vary widely in how likely they would engage in different behaviors. **Please provide truthful responses, not what you think is more desirable.** Now, please respond to each item on a scale ranging from 1 (not at all likely) to 7 (highly likely):

		Not at all likely						Very Likely
		1	**2**	**3**	**4**	**5**	**6**	**7**
1	You work in a fast-food restaurant in downtown Victoria. It's against policy to eat food without paying for it. You came straight from classes and are therefore hungry. Your supervisor isn't around, so you make something for yourself and eat it without paying.							
2	You're preparing for the final examination in a class where the professor uses the same examination in both sections. Some of your friends somehow get a copy of the examination after the first section. They are now trying to memorize the right answers. You don't look at the examination, but just ask them what topics you should focus your studying on.							
3	You've waited in line for 10 min to buy a coffee and muffin at Starbucks. When you're a couple of blocks away, you realize that the clerk gave you change for $20 rather than for the $10 you gave him. You savor your coffee, muffin and free $10.							
4	You get the final examination back from your professor and you notice that he's marked correct three answers that you got wrong. Revealing this error would mean the difference between an A and a B. You say nothing.							
5	Your accounting course requires you to purchase a software package that sells for $50. Your friend, who is also in the class, has already bought the software and offers to lend it to you. You take it and load it onto your computer.							
6	Your boss at your summer job asks you to get confidential information about a competitor's product. You therefore pose as a student doing a research project on the competitor's company and ask for the information.							
7	You are assigned a team project in one of your courses. Your team waits until the last minute to begin working. Several team members suggest using an old project out of previous class. You go along with this plan.							