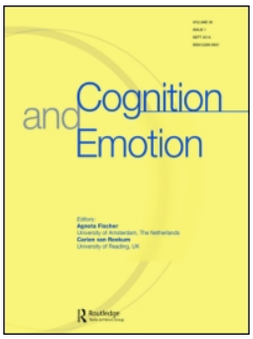

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The content and structure of laypeople's concept of pleasure

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Five studies were conducted to map the content and structure of laypeople's conceptions of pleasure. Instances of the pleasure concept collected in Study 1 consisted predominantly of objects, events or persons described as sources of pleasure. Content analysis suggested that the pleasure category, like emotional response categories, might be formed at an implicit level where various pleasure antecedents are grouped based on common phenomenological qualities of the affective experience. Studies 2 and 3a showed that the pleasure category possesses a graded structure and fuzzy boundaries. Results further revealed that, either when explicitly presented with labels (Study 3b) or left to their own implicit categories during a sorting task (Study 4), laypeople represented pleasure as a hierarchical concept in which differentiated pleasure types (i.e., intellectual, emotional, social and physical) were subsumed under a higher level unitary form of pleasure. In this structure, unitary and differentiated pleasures shared a set of common affective qualities but were also distinguishable by unique and distinctive affective characteristics (Study 5). Ties to prior theories of pleasure and implications for decision making and behavioural research are discussed.

> Just as to the man who wants money to spend, it is all the same whether the gold was dug out of the mountain or washed out of the sand, provided it is everywhere accepted at the same value, so the man who cares only for the enjoyment of life does not ask whether the ideas (which he enjoys) are of the understanding or of the senses, but only how much and how great pleasure they will give for the longest time.
>
> (Kant, 1788/1948, p. 110)

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> A product like gold emancipates itself from, and exists independently of, its source. Is the pleasure separable from the flavor in the same sense? Clearly not. The experience of pleasure remains dependent upon the experience of the flavor (or whatever source it may have).
>
> (Duncker, 1941, p. 399)

Is pleasure of one kind? Like gold and money, a currency reducible to its quantity regardless of its quality, as suggested by Kant? Or, is pleasure inseparable from its antecedents and experiential qualities, as implied by Duncker? These opposite philosophical perspectives rest on very different conceptualisations of pleasure and they have divergent implications for modern research on decision making and behaviour. On the one hand, Kant's position suggests that pleasure is a unitary phenomenon, independent of its source and subjective experience. Thus, units of pleasure are simply added to a mental counter, integrated at some level, regardless of kind, in much the same way a bank account integrates money regardless of its source or what may be purchased with it. The bulk of modern research on decision making and behaviour adheres to such a unitary view of pleasure. On the other hand, pleasures of different kinds may be inseparable from their respective antecedents and from the nuances of their subjective experience, and therefore not so straightforwardly integrated into a single account, as suggested by Duncker. This differentiated perspective on pleasure has appeared across eras in various disciplines.

We believe that to achieve a more comprehensive understanding of the nature of pleasure, including its unitary and differentiated aspects, and its impact on decision making and behaviour, it is critical to begin to map the psychological reality of pleasure as it is represented in people's mind. As argued by Shaver and his collaborators, the ''structure of representation necessarily reflects the gross structure of reality, or at least the distinct features of reality that are most important for human transactions within the world'' (Shaver, Schwartz, Kirson, & O'Connor, 1987, p. 1062). To our knowledge, there has been no systematic study of the concept of pleasure, either to test the unitary and differentiated views, or simply to explore its content and structure. The present research consists of a series of five studies that was designed to provide a systematic empirical exploration of the lay concept of pleasure. First, we review the literature on the nature of pleasure. Then, building on prior research on emotions as categorical concepts, we examine the content and the internal structure of the lay concept of pleasure. Based on our findings, we propose that the unitary and differentiated views may simply be two levels at which pleasure is represented as a hierarchical concept.

THE NATURE OF PLEASURE

Pleasure has been conceptualised as either a unitary or a differentiated phenomenon and strong support can be summoned for each position. Consider first the view of pleasure as a unitary phenomenon. Within this perspective, pleasure has

also been named valence, hedonic tone, utility, or approach response. Regardless of the label, unitary pleasure is akin to a summary judgement of how good it feels to interact with an object. The experiential quality of this summary is independent of its antecedents and the various sensations and emotions that compose its phenomenology. This view of pleasure is captured in the first definition of pleasure in the *Oxford English Dictionary*: ''1. a. The condition of consciousness or sensation induced by the enjoyment or anticipation of what is felt or viewed as good or desirable'' (Simpson & Weiner, 1989, p. 1031). The unitary perspective of pleasure can be found in various scientific fields of enquiry. For instance, in psychology, pleasure is a basic, pancultural dimension underlying human emotional experience (Russell, 1991). In decision science, pleasure has been equated with experience utility and much theorizing relies on the axiom that individuals make decisions and behave to maximise such utility (Kahneman, Wakker, & Sarin, 1997). Utility-maximising decisions are believed to be independent of the sources from which pleasure arose and the affective qualities that were associated with its experience. In physiology, Cabanac (1971, 1992) defined pleasure as the pleasant sensation that arises when hunger, bodily comfort, or other visceral drives are satisfied, thereby re-establishing homeostasis. Cabanac further argued that it is the intensity of such pleasant sensation that guides choice between alternative, sometimes conflicting courses of action.

Contenders of the unitary view do not challenge that pleasure may result from different antecedents and be associated with a variety of affective experiences. However, they assume that capturing such components in an organised fashion is doubly useless because antecedents and experiential qualities are idiosyncratic and untractable, and get distilled anyway into a Good/Bad summary, which ultimately drives decision making and behaviour (Kahneman, 1999). For instance, Bentham (1781/1988), whose ideas have fuelled modern utility theory, recognised the diversity of hedonic experiences when he outlined no less than 14 different kinds of pleasures, such as pleasures of sense, wealth, skill, and memory. As another sign of nuances between pleasures, he listed nine subtypes under the ''pleasures of the senses'' category. However, neither Bentham, nor the behavioural economists and decision scientists whose work he inspired, have integrated any of this experiential richness in their theoretical formula for computing the utility derived from different hedonic experiences.

As for the differentiated perspective, there is no shortage of expressions to describe varieties or types of pleasure, ranging from those provided by Greek philosophers to the diverse qualities and properties assigned to pleasure by artists of all times (see Bailey, 1928; Dissanayake, 1996; Gaskin, 1995; Le Bel & Dubé, 1997). For example, among Greek philosophers whose influence has inspired modern thinking on pleasure, Plato, Aristotle, and Epicurus all distinguished the pleasures of the body from those of the soul. In the Platonic tradition, sensations were deemed fallible and only led to false pleasures while true pleasure resided in the domain of the soul. For Plato, these two types of pleasures clearly were not of the same nature. For Aris-

totle, and even more so for Epicurus, the operation of reason and consciousness could raise simple pleasures born of sensations to the status of higher pleasures. Although pleasures of the mind could be derived from the simpler pleasures of the body via the operation of reason, both types of pleasure were clearly differentiated.

Modern thinkers have recently proposed various typologies of pleasure, again largely based on theoretical arguments. For instance, Duncker (1941) sidestepped the body-soul dichotomy and proposed three types of pleasure: *sensory pleasures*, for which the immediate object of pleasure is the nature of a sensation (e.g., the flavour of the wine, the feel of silk); *aesthetic pleasures*, derived from sensations expressive of something, offered by nature, or created by man (e.g., sunsets, music); *accomplishment* pleasures represent the emotional, pleasant consciousness that something valued has come about (e.g., mastery of a skill, sport performance). The latter type of pleasure is conceptually close to Csikszentmihalyi's (1990) concept of flow, although for Csikszentmihalyi pleasure is limited to sensations, as ''beyond that, it becomes enjoyment'' (Seligman & Csikszentmihalyi, 2000, p.12). Kubovy (1999) recently returned to the distinction between pleasures of the body and those of the mind. Interestingly, he defined pleasures of the mind as collections of emotions distributed over time. He also acknowledged the pleasures of nurture and of belonging to a social group as additional varieties of pleasure. Kubovy's typology parallels the sociological account offered by Tiger (1992) who identified four pleasure types: *physio*-pleasures (sensations or physical impressions obtained from eating, drinking, lying in the sun), *socio*-pleasures (borne of the company of others), *psycho*-pleasures (satisfaction from individually motivated tasks or acts), and *ideo*-pleasures (borne of ideas, images, and emotions privately experienced). Tiger's typology, like previous ones, has never been tested empirically.

As of today, the literature on unitary pleasure includes no test of the assumption that all pleasures of equal intensity lead to the same approach response regardless of their antecedents and emotional qualities of their experience, against an alternative differentiated view. Conversely, the literature on the differentiated nature of pleasure still only consists of broad theoretical arguments and typologies awaiting empirical validation. As suggested earlier, a prerequisite for a clearer understanding of the motivational power of pleasure and its various forms of expressions is to proceed with a systematic empirical investigation of the concept of pleasure in the layperson's mind, as a means to map its psychological experience. In contrast to the dearth of empirical studies on the lay concept of pleasure, a considerable amount of work has been done on this topic in the domain of emotions. Because pleasure and emotions share a common affective nature, we now build on the literature on emotions and offer a conceptualisation of pleasure that can accommodate both the unitary and differentiated perspectives.

THE CATEGORICAL CONCEPT OF PLEASURE

Research on emotions has shown that people are highly knowledgeable about various facets of their affective experiences and that it is possible to elicit memory representations of such experiences (Fehr & Russell, 1984, 1991; Fitness & Fletcher, 1993; Russell & Fehr, 1994; Shaver et al., 1987). Based on the robust evidence of categorisation in the domain of emotions, it is reasonable to expect that laypeople are also able to articulate their representations of pleasure and that the content of such representation has evolved into a categorical concept. In the present research, we explore the concept of pleasure in three ways. First, we address the nature of instances that form the content of the pleasure category. We then explore whether internal structure and membership in the pleasure category is defined according to the principles of classical concepts or according to those of prototype theory. Finally, we provide the theoretical and empirical bases for a proposition that pleasure is a hierarchical concept in which differentiated pleasure types are subsumed under a higher level unitary form of pleasure. In this structure, unitary and differentiated pleasures share a set of common affective qualities but are also distinguishable, as they each possess unique and distinctive affective characteristics.

Category content

If the concept of pleasure is categorically organised, what is the nature of the ''members'' or ''instances'' contained in the category? Robust evidence shows that emotions form taxonomic categories at both the general domain of emotions (Fehr & Russell, 1984; Shaver et al., 1987) and at the level of specific emotions, like anger (Russell & Fehr, 1994) and love (Fehr, 1988). For instance, studies by Fehr and Russell (1984) and by Shaver et al. (1987) found that the general emotion category differentiates itself at a lower level into specific types of emotions like love, joy, anger, fear, sadness, etc. At the level of specific emotions, Russell and Fehr (1994) found that laypersons' concept of anger was differentiated into a constellation anger-like emotional states, such as frustration, irritation, rage, etc, that vary in typicality as instances of anger. Thus, if the pleasure concept were also a taxonomical category, its various instances would consist of subtypes of pleasure. As with emotions, a general category could be formed at the level of unitary pleasure and distinct taxonomic categories could be formed at the more specific level, one for each possible differentiated pleasure such as perhaps ''intellectual'', ''social'', etc.

One may argue, however, that a taxonomic structure may not be the only representation of pleasure as a categorical concept. Individuals could have a hard time articulating the explicit rules of coherence necessary to form abstract representations of the type of pleasure to which various instances might belong. Recently, Niedenthal, Halberstadt, & Innes-Ker (1999) proposed and demonstrated that things, events, and persons that evoke the same emotional response

may be categorised together and may be treated as the ''same kind of things'', even when such things are otherwise perceptually, functionally, and theoretically diverse. They labelled such groupings ''emotional response categories'' because these are formed on the basis of a common affective experience triggered by members of the category. As evidence of such categorisation, Niedenthal and her collaborators (Niedenthal & Halberstadt, 1995; Niedenthal et al., 1999; Niedenthal, Halberstadt, & Setterlund, 1997) found that recognition of conceptually and perceptually dissimilar emotion antecedents was facilitated by emotion congruence: Happiness priming favoured recognition of happiness antecedents, sadness priming favoured recognition of sadness antecedents. Such categorisation effects were not observed in the neutral, control conditions.

Note that the actual memory representation of these emotional response categories remains an empirical question as Niedenthal et al.'s work has thus far been limited to the categorisation process *per se*, with no explicit exploration of the memory representation of such categories. However, Niedenthal and her collaborators proposed that the content of emotional response categories is probably not abstract as it is the case in taxonomic categories of emotions. Instead, they suggested that objects, events, or persons that are antecedents of specific emotional experience might simply be stored as exemplars (Niedenthal et al., 1999). Niedenthal et al.'s findings and theorising suggest that the pleasure category may not necessarily contained ''types of pleasures'' in a taxonomic category, but instead, may be composed of various objects, persons, or events grouped, similar to an emotional response category, on the basis of a common pleasurable or affective experience. Building on prior work on the categorisation of emotions, we propose that pleasure may be represented in the layperson's mind in one of two ways: either as a taxonomy composed of various subtypes of pleasure, or as an emotional response category grouping diverse pleasure antecedents. At this point, there is no basis on which we can argue for one over the other alternative and this issue will be empirically explored in Study 1.

Internal structure and category membership

Whether the concept of pleasure emerges as a taxonomy or as an emotional response category, it remains to be determined whether its internal structure and category membership follows the classical rules of concept formation, with membership being clearly defined by a set of necessary and sufficient features, or alternatively, if it follows the rules of prototype theory, with graded structure and fuzzy boundaries. We suspect the emergence of pleasure as a classical category to be unlikely because graded structure in support of prototype theory has been observed even for concepts that one might intuitively expect to be classically defined such as odd/even numbers (Armstrong, Gleitman, & Gleitman, 1983). Moreover, there is robust evidence that emotion categories reflect graded structure and fuzzy boundaries (Fehr & Russell, 1991; Russell & Fehr,

1994; Shaver et al., 1987). Therefore, we expect the internal structure and category membership of the pleasure category to conform to prototype theory and reveal signs of graded structure and fuzzy boundaries. This proposition is explored in Studies 2 and 3.

Hierarchical structure

The two aspects of the pleasure category addressed thus far (i.e., their content and the principles guiding structure formation) are applicable to both the unitary and the differentiated views of pleasure. Under the unitary view, the pleasure category would be structured around a general representation of pleasure, akin to the general emotion category observed in prior research (Fehr & Russell, 1984; Shaver et al., 1987). Under the alternative differentiated view, differentiated pleasures correspond to distinct psychological realities, and distinct categories would emerge around specific pleasure types, such as ''intellectual'', and ''social'', to use some descriptors previously suggested in the literature. Such a differentiated categorisation has been observed for specific emotions like anger (Russell & Fehr, 1994) and love (Fehr, 1988). Yet, neither view is satisfactory. On the one hand, the well-accepted and universal approach-inducing power of pleasure relies on the unitary aspect of pleasure for successful and adaptive decisions and actions to be made when interacting with the environment (Damasio, 1999; Higgins, 1997). On the other hand, viewing pleasure strictly from a general approach tendency perspective is too restrictive and prevents a richer understanding of human behaviour that could accrue from a closer examination of the affective qualities of the experience of diverse pleasurable instances (Damasio, 1999; Higgins, 1997).

Between the unitary and differentiated views of pleasure, we propose that the pleasure category is structured as a hierarchy, with a general, unitary representation of pleasure at the highest level. We further propose that this higher level unitary pleasure differentiates itself into meaningful subgroups of pleasure instances, either explicitly labelled as subtypes of pleasures or implicitly grouping antecedents sharing some experiential affective qualities. This view of the pleasure concept as a hierarchical category is inspired by recent research that underscores the need to recognise the universal value of the approach-inducing power of pleasure in understanding human behaviour in general, while at the same time pressing to move beyond the notion that the complex modern world can simply be divided into stimuli that are to be approached or avoided based on how good or bad they make one feel. Higgins (1997), for instance, argued for a better understanding of the various facets of the psychological experience of pleasure and their relationship to approach-avoidance motivation. In Higgins, Shah, and Friedman (1997), it was reported that the affective qualities of pleasure derived from the achievement of different goals varied as a function of the regulatory focus of the goal. More specifically, achievement of a promotion

goal (e.g., advancement and personal growth) was associated with pleasures of a cheerful quality while achievement of a prevention goal (e.g., protection and safety) procured pleasures of a quiescent emotional quality. Such findings suggest that the relationship between pleasure and behaviour may not be based solely on the intensity of the former but must somehow also be shaped by its antecedents and experiential qualities.

A similar argument in favour of differentiation and how it may improve the understanding of the various facets of affective experience accounts for the development of emotional response categories at the level of specific emotions, by opposition to the level of general positive-negative affect. Niedenthal and her collaborators argued that emotions have distinct behavioural tendencies that are more specific than the generalised approach tendency tied to general affect. For instance, joy is generally believed to trigger a tendency to act in a powerful and triumphant demeanour while warmth and affection generally leads to caressing (Davidson, 1992; MacLean, 1993; Plutchik, 1980). Support for this differentiated view of emotional response categories (over that of generalised affect) was found in a series of category learning experiments (Niedenthal et al., 1997, 1999). In these studies, the authors found emotion-specific and not valence-level facilitation effects: neither happiness priming/love recognition nor sadness priming/anger recognition showed facilitation effects while such effects were observed in all four emotion-specific priming/recognition contexts. By extension, unitary pleasure, not unlike general affect in Niedenthal et al.'s theorising, may well have evolved into something akin to emotional response categories with more differentiated types of pleasure capturing more precise information for approach-avoidance decisions and behaviours.

In sum, we build upon these two lines of research to propose that pleasure is organised as a hierarchical category in which the representation of general, unitary pleasure is differentiated further into types of pleasure (by comparison to a category in which all instances relate directly to general pleasure). We believe that this structural arrangement is more functional, permits abstraction and inference to new instances (Rosch, 1975), and provides more specific information relevant to the person-stimulus interaction and behavioural responses called for. We further propose that, because specific emotions are tied to specific behavioural tendencies and entail appraisal of various complexity, significant insights into the unitary and differentiated nature of pleasure as represented by laypeople can be gained by unravelling the commonalities and differences in the emotional qualities of pleasurable experiences represented at various levels in this hierarchy. The emotional or affective qualities that are common to unitary pleasure and to differentiated types of pleasure are likely to reflect clear approach tendencies and not to involve complex appraisal. By contrast, the affective qualities uniquely associated with differentiated pleasures may entail more diversified tendencies and appraisal, providing insight into the pheno-

menological qualities of these experiences and into the various ways in which they guide relationships with hedonic stimuli. These propositions, briefly explored in Study 3, are at the core of Studies 4 and 5.

OVERVIEW

Five studies were designed to map laypeople's concept of pleasure and to test the proposed hierarchical structure that we believe can accommodate unitary and differentiated views. In Study 1, a free elicitation task was used to explore the content of the pleasure category and ascertain whether it reflects evidence of pleasure as a taxonomic category grouping types of pleasures, or as an emotional response category, composed of exemplars of pleasure antecedents. Studies 2 and 3 were designed to determine whether the pleasure category is organised in a manner consistent with the classical view or with prototype theory. Participants in Study 2 provided typicality ratings of pleasure antecedents, whereas Study 3 was a test of category membership (''yes/no'' decisions) designed to determine whether the pleasure category possesses fuzzy boundaries. In Study 3, we also started to investigate whether the pleasure category is organised simply around a representation of general unitary pleasure or whether pleasure representations show signs of further differentiation. The objective was to determine whether laypersons, whose pleasure category may not naturally be structured around types, were able to assign antecedents to differentiated pleasures when explicitly presented with them, or if instead they would prefer to group these antecedents under the general unitary level. Study 4 was designed to further explore the degree of differentiation of the pleasure category and consisted of a hierarchical cluster analysis of data from a sorting task conducted with pleasure antecedents. Finally, Study 5 was designed to explore the similarities and differences in the patterns of emotional qualities associated with the two levels in the pleasure hierarchy (i.e., the general unitary representation of pleasure and the differentiated pleasures). Participants in all studies were undergraduate students at a major Eastern Canadian university. No student took part in more than one study. Except for Study 4 where participants were enrolled in a lottery for a cash prize, participants received no incentive. Results for each study are presented and then discussed briefly, and their meaning, validity, and limitations are elaborated in the general discussion section.

STUDY 1: FREE ELICITATION OF THE CONTENT OF THE PLEASURE CATEGORY

Participants were given the category of pleasure and were asked to list subcategories thereof. Following Russell and Fehr (1994), the frequency with which a subcategory was listed served as an index of its degree of membership.

Method

Participants (n = 78) were given these instructions adapted from Fehr and Russell (1991) and Russell and Fehr (1994): ''In this study, we're interested with *types* within a general category. For example, if we ask you to list types of the category CHAIR, you might write: rocking chair, recliner, lawn chair, kitchen chair, stool, bean bag chair, and so on. The category we are interested in is PLEASURE. Please write down as many items as come to mind when you think of PLEASURE. Stop after a few minutes or 20 items or so. There are no right or wrong answers. We just want to know what comes to your mind when you think of PLEASURE''.

Results and discussion

In all, 1127 units of information were collected and were coded independently by two coders, using a scheme adapted from emotion research (Fehr & Russell, 1984; Shaver et al., 1987). The coding scheme consisted of the following content codes: (1) *types of pleasure*: descriptors, adjectives, and other words used to qualify the word *pleasure* (e.g., physical, meaningful, intellectual); (2) *emotion words*: feelings or emotions associated with the experience of pleasure (also included arousal or other affective qualities associated with pleasure antecedents, e.g., relaxing, exciting, etc.); (3) *antecedents*: specific events, persons, places, or things that bring pleasure. Six items were deemed uncodable by both coders. Agreement between the two coders was 0.77 over the entire corpus of responses and discrepancies were resolved by discussion.

Table 1 presents the content of participants' freely elicited concept of pleasure. This comprehensive coding involved two types of aggregation of participants' accounts. First, units that shared a syntactical form were coded together. For instance, ''relaxed'' and ''relaxing'' were coded together, as were ''excited'' and ''exciting'' under the category ''Emotion words''. The second round of aggregation focused on semantic similarities between units of information. For instance, ''food'', ''chocolate'', ''desserts'', and ''ice cream'' were collapsed under ''food''. In such cases, the frequency of units mentioned at least twice and aggregated under a broader heading is indicated in parentheses in Table 1. For example, ''food'' proper was mentioned 30 times, chocolate seven times, desserts and ice cream twice each, items mentioned only once make up the remaining five units under food for a total of 46 mentions.

Supporting our proposition that the layperson's mental representation of pleasure evolves into a categorical concept, no participants found the task nonsensical and most were able to provide rich and detailed accounts of their mental representation of pleasure with reasonable consistency. On average, each participant generated 14.45 information units. The content of participants' protocol suggests that the pleasure category may be organised as an emotional response category rather than as a taxonomic category. Antecedents were, by

TABLE 1
Content of freely elicited lay concepts of pleasure

Type of pleasure	*66*
Physical	5
Erotic	2
Exotic	2
Expensive	2
Free	2
Innocent	2
Intense pleasure	2
Positive	2
Sensory pleasure	2
Idiosyncratic items	45
Emotion words	*164*
Love	23
Fun	23
Relaxing	19
Happiness	16
Warmth	11
Enjoyment	8
Satisfaction	6
Exciting	4
Feelings	4
Fulfilled	4
Accomplishment	3
Achievement	3
Content	3
Crazy	3
Joy	3
Lazy	3
Feel good	2
Peaceful	2
Pleasing	2
Relief	2
Soothing	2
Idiosyncratic items	18
Antecedents	*891*
Sports(14)/skiing(8)/ hockey(7)/ swimming(5)/ exercising(4)/ baseketball(3)/ rollerblading(2)/ snowboarding(2)/ other (9)	54
Sex(44)/seduction(3)/ masturbation(2)/other(1)	50
Food(30)/chocolate(7)/ desserts(2)/ ice cream(2)/other(5)	46
Friends	40
Music(27)/concerts(2)/ disco(2)/CDs(2)/ other(1)	34
Family(17)/brother(2)/ parents(2)/other(2)	23
Sleeping	23
Movie	21
Beach(16)/sand(2)/sea(2)	20
Laugh	17
Sun(13)/Heat(3)	16
Vacation	16
Money	15
Watching TV(12)/other(3)	15
Alcohol(9)	15
Parties	14
Dining(6)/eating(5)/ other(1)	12
Shopping(10)/grocery shopping(2)	12
Shower(6)/Bath(6)	12
Travelling	12
Performance	11
Sensation(3)/touch(4)/ taste(3)/other(1)	11
Games(7)/computer games(3)	10
Good grades	10
Reading(8)/Literature(2)	10
Success	10
Women	10
Car(7)/Porsche(2)	9
Drugs(4)/ecstasy(2)/ rush(2)/other(1)	9
Comfortable	9
Dancing	9
Fragrance	9
Massage	9
No exams/work	9
Clothes(6)/other(2)	8
Holiday	7
Boyfriend/Girlfriend	6
Dream	6
Drinking	6
Places	6
Smile	6
Home	5
Kissing	5
Smoking	5
Birthday	4
Christmas	4
Driving	4
Entertainment	4
Freedom	4
Health	4
Learning	4
Saturday(2)/other(2)	4
Summer(3)/spring	4
Walk	4
Water(2)/other(2)	4
Conversation	3
Going out/date	3
Playing guitar(2)/other(1)	3
Hug	3
Men	3
Play	3
Romance	3
Singing	3
Wildlife	3
Work	3
1980s/1990s	2
Activities	2
Air condition	2
Art	2
Beautiful/attractive	2
Boating	2
Body/arms	2
Camera	2
Clubs	2
Compliments	2
Cooking	2
Experience	2
Gifts	2
Going to a café	2
Hanging around/out	2
Holding hands	2
Hotel rooms	2
Knowledge	2
Letters (writing/getting to/ from friends/family)	2
Life	2
Meeting new people	2
Passion	2
Peace toward men on Earth	2
Prestige	2
School	2
Snow	2
Socializing	2
Tanning	2
Telephone call (to/from friends/family)	2
Thinking	2
Materialism	2
Wedding	2
Idiosyncratic items	91

far, the largest content category (891 mentions or 79.1% of all units) with also a significant amount of emotion words (164 mentions, 14.6% of all units). In fact, only 66 units (5.9%) referred to types or qualifiers of pleasure, and of these, 45 were idiosyncratic mentions. The proportion of antecedents from this free listing task is much higher than what has been found in similar studies conducted in the domain of emotions (Fehr & Russell, 1984, 1991; Russell & Fehr, 1994). In these studies, the proportion of antecedent ranged between 5% (Fehr & Russell, 1984; Russell & Fehr, 1994) and 20% (Fehr & Russell, 1991).

What was the nature of antecedents composing the pleasure category as per the participants' accounts? As can be seen in Table 1, pleasure antecedents were highly diversified and related to all the various types of pleasures offered by the literature. However, as expected for categorical concepts, the list of pleasure antecedents reflected a reasonable degree of consistency across participants: The ten most frequently mentioned antecedents accounted for 36.8% (328 mentions) of all antecedents mentioned. At the other extreme, were 91 idiosyncratic antecedents, a proportion that is not higher than those obtained in studies on taxonomic emotion categories (e.g., Fehr & Russell, 1984, 1991). Between these two extremes, there was no clear break between popular and unpopular antecedents.

Was the emergence of pleasure as a taxonomic category given a fair chance? The last sentence of the instructions (''We just want to know what comes to your mind when you think of PLEASURE''.) may have distracted participants from thinking about more abstract types of pleasure in favour of more easily available top-of-mind associations, like antecedents and experiential qualities. Therefore, we conducted a first follow-up study with 51 different participants, which was essentially a replication of Study 1, removing the last sentence of the instructions. Responses were coded by the same two coders using the same coding scheme. Agreement between the two coders was 0.82. Results were almost identical to those reported earlier: Antecedents were mentioned 555 times, emotion words 43 times, and various types of pleasure were mentioned 6 times. Types included: physical (2), intellectual (1), social (1), immoral (1), and virtual (1).

Because the corpus of accounts from Study 1 was going to be used in the subsequent studies, we conducted a second follow-up to ensure that we elicited as rich and detailed content of the pleasure category as possible. Emotional response categories are supposed to capture the phenomenal qualities of one's interaction with people, object, and events (Niedenthal et al., 1999) and yet, thus far, respondents have been asked to elicit types of pleasure only. Therefore, this follow-up study was designed to elicit the content of specific pleasurable episodes. Participants (n = 69) were instructed to think of two recent pleasurable experiences, and to describe each one it in their own words, and to list what they felt in connection with each experience. Instructions for that study were adapted from Fehr and Russell (1984). In total, 124 ''episodes'' were coded (1.8 episode

per participant) using the same scheme as for Study 1. Because the results of these two follow-up studies confirm those of the first one, they will not be fully discussed but only briefly outlined. The most frequently mentioned antecedents were sports (19 episodes), school (11 episodes), friends (11), and sex (9). The most frequently reported emotions were generally similar to Study 1: happiness (39), excitement (23), and joy (18). However, the emotional make-up of pleasurable experience elicited under experience-eliciting instructions contained more complex emotions, such as fulfilment (8), accomplishment (7), and relief (6) and a limited number of negative emotions: anxiety (4), fear(2), anger (2), and idiosyncratic mentions of sadness, revenge, greed, nervousness, and vulnerability. Other affective responses included: stress-free (8), energetic (4), peaceful (4), calm (3), horny (3), warm (3), and vulnerability (2).

The results of Study 1 and its two follow-up studies provide evidence that the content of the pleasure category is primarily composed of exemplars of various pleasure antecedents grouped into an emotional response category, rather than encompassing types of pleasures, that would have reflected formation of taxonomic categories. In addition, results of Study 1 did not suggest the existence of any necessary and sufficient features that would have implied that pleasure is a classical concept. Instead, regardless of the nature of information units, the frequency of mention of various instances showed no clear break, much in line with prototype theory. In Studies 2 and 3, we provide a more formal empirical exploration of the internal structure of the pleasure category. Sixty antecedents were chosen from the corpus of Study 1 and its two follow-up studies. Antecedents were chosen to cover the whole range of frequency of mention, including 13 idiosyncratic antecedents.

STUDY 2: GRADED STRUCTURE OF PLEASURE ANTECEDENTS

This study was designed to determine if the antecedents that composed the pleasure category displayed signs of graded structure consistent with prototype theory, or if instead, their typicality ratings produced the bimodal distribution reflecting the ''yes/no'' nature of category membership consistent with the classical view (Rosch & Mervis, 1975).

Method

Participants (n = 58) were presented with the list of 60 pleasure antecedents and asked to rate each one in terms of its degree of membership in the category of pleasure. Instructions were patterned after Fehr and Russell (1991, study 2). Participants were asked to rate each item on a scale ranging from 1 (*extremely poor example of the kinds of things that bring me pleasure*) to 6 (*extremely good example of the kinds of things that bring me pleasure*). Antecedents were presented in the same random order to each participant.

Results and discussion

The mean typicality ratings for the 60 antecedents are reported in Table 2. Guttman's split-half reliability coefficient was 0.79. The broad range of typicality ratings and their continuous distribution reflects the graded structure of pleasure antecedents. Very typical antecedents (mean of 5 or higher) included success, good grades, travelling, romance, boyfriend/ girlfriend, and sex. More atypical antecedents, such as prayer and snow, scored around 2 on the typicality scale. Antecedents between these two extremes produced a rather smooth and continuous distribution and included moderately typical activities like watching television, reading, telephone call to or from friends or family.

TABLE 2
Pleasure antecedents by decreasing order of mean typicality

Antecedents	*Mean*	(SD)	*Antecedents*	*Mean*	(SD)
Success	5.41	(0.75)	Desserts	3.97	(1.12)
Good grades	5.28	(0.77)	Holding a baby	3.86	(1.28)
Travelling	5.17	(0.77)	Writing/receiving letters to/from family/friends	3.84	(1.15)
Romance	5.17	(0.77)			
Boyfriend/Girlfriend	5.14	(0.77)	Birthday	3.84	(1.11)
Sex	5.0	(0.96)	Watching TV	3.69	(0.97)
Sun	4.97	(0.84)	Reading	3.67	(1.37)
Music	4.93	(0.75)	Telephone call to/from family/friends	3.52	(1.33)
Knowledge	4.84	(0.94)			
Sleeping	4.83	(1.11)	Concerts	3.45	(1.36)
Beach	4.78	(1.06)	Sales	3.46	(1.43)
Money	4.76	(1.14)	Going to a café	3.45	(1.29)
Conversation	4.53	(0.91)	Drinking	3.21	(1.38)
Meeting new people	4.52	(0.98)	Masturbation	3.13	(1.43)
Clothes	4.5	(0.93)	Art	3.10	(1.27)
Food	4.47	(0.93)	Literature	3.09	(1.24)
Moving into my own apartment	4.45	(1.23)	Candles	3.05	(1.38)
Shower	4.45	(1.05)	Fireplace	3.02	(1.20)
Equality	4.34	(1.10)	Cooking	3.0	(1.17)
Peace on earth	4.34	(1.35)	Materialism	3.0	(1.10)
Movie	4.33	(1.01)	Solitude	2.93	(1.05)
Shopping	4.33	(1.07)	Cartoons	2.84	(1.20)
Dressing up	4.24	(0.93)	Ecstasy	2.76	(1.71)
Seduction	4.23	(1.12)	School	2.74	(1.10)
Sports	4.19	(1.46)	Aromatherapy	2.50	(1.15)
Popularity	4.16	(0.85)	Prayer	2.43	(1.54)
Parties	4.12	(1.03)	Grocery shopping	2.36	(1.22)
Learning	4.10	(1.18)	Computer games	2.23	(1.11)
Christmas	4.00	(1.32)	Drugs	2.16	(1.35)
Choculate	4.00	(1.28)	Snow	2.12	(1.19)
Exercising	3.98	(1.25)	Repetition	1.71	(0.74)

STUDY 3: CATEGORY MEMBERSHIP AND ASSIGNMENT TO UNITARY AND DIFFERENTIATED PLEASURES

According to Russell and Fehr (Fehr & Russell, 1984, 1991; Russell & Fehr 1994), beyond a graded structure, a key difference between classically and prototypically defined concepts concerns the categorisation of unclear cases. If category membership is determined by a set of defining, necessary, and sufficient features, then membership should be an easy ''either/or'' decision. Thus, in the classical view, people should agree on which events and which subcategories are and are not members of the pleasure category, even for less typical, idiosyncratic instances. By contrast, prototype theory predicts that agreement among participants will gradually vary from the clear cases indicated by a ''yes'' answer to the question ''is X a true example of Y?'' through the unclear cases, indicated by a ''no'' to the same question. This gradual shift should correspond to the graded structure and the degree of agreement on category membership should form a smooth continuum. In their study on anger, Russell and Fehr (1994), using a 90% agreement criterion, found consensus on fury, rage, aggravation, hate, and hostility as being subtypes of anger but they found no clear agreement on what was not anger. Fehr and Russell (1991) observed similar results in the domain of love and also found a high correlation between the probability of an item being judged a true case of love and its typicality rating. Study 3a was designed to determine whether pleasure antecedents displayed signs of fuzzy boundaries.

Thus far, we have used unitary, general pleasure as a referent in eliciting the category content and structure. In Study 3b, we explored the possibility that the general representation of pleasure differentiates itself into reliable and meaningful groupings in an implicit manner, even if participants were unable to explicitly label these groupings or to articulate the rules underlying their formation. Because emotional response categories implicate the phenomenal qualities of the person's experience, and not just the conceptual representation of their features, Niedenthal and her collaborators also believe that these categories may be formed at the subcortical level (Niedenthal & Halberstadt 1995), a level at which much of emotional processing occurs in an implicit manner (i.e., without conscious, explicit knowledge that such categories are formed, LeDoux, 1993). This suggests that the content of the pleasure category and its hypothetical differentiation may be more or less accessible to introspection. Therefore, when explicitly given labels to do so, participants should be able to discriminate and identify the specific type of differentiated pleasure produced by various hedonic stimuli. After participants had assessed the category membership of various pleasure antecedents (Study 3a), we asked them to assign each antecedent to either a general pleasure category or to one of four more specific and differentiated types of pleasure. The four differentiated pleasures (i.e., physical,

social, intellectual, and emotional) were selected as being lay terms that could capture the four types of pleasure most often offered by prior theorists (see Kubovy, 1999; Tiger, 1992).

Method

Study 3a. Participants (n = 61) were presented with the 60 pleasure antecedents used in Study 2. Participants were asked to assess category membership by indicating whether each antecedent was or was not a true, genuine, case of pleasure. Instructions for category membership task were adapted from Fehr and Russell (1991). Participants were asked to indicate by a ''Yes'' or a ''No'' next to each antecedent their answer to the question ''X is a true genuine case of pleasure''.

Study 3b. After indicating their opinion on the ''yes/no'' category membership question, participants were asked to assign each antecedent to one of five pleasure categories. In order to verify that participants indeed possessed and were able to instantiate a mental representation of each type of pleasure when performing the category assignment task, they were first asked to indicate what they spontaneously associated with each type of pleasure. The 60 antecedents were then listed (in a different order from the previous page) in a column on the left-hand side, next to five columns headed by the label of one of the possible pleasure categories: ''General pleasure, can't say which differentiated type'', ''physical pleasure'', ''social pleasure'', ''intellectual pleasure'', and ''emotional pleasure''. Instructions were adapted from Fehr and Russell (1984, study 2). Participants were asked to indicate the dominant type of pleasure they associated with each antecedent by placing a check mark in the column with the label corresponding to their association.

Results and discussion

Category membership. Table 3 presents the percentage of participants who denied category membership for each of the 60 antecedents. Results show that the agreement on membership among participants is a matter of degree. Interestingly, the asymmetry between clear and unclear instances predicted by classical theory did not emerged. There were a good number of cases that were clear instances of the category (12 items with 90% or higher agreement; 24 items with 80% or higher). Items with the highest agreement included the most typical pleasure antecedents unravelled in Studies 1 and 2. At the other extreme, possibly reflecting the diverse and idiosyncratic nature of pleasure antecedents, only one atypical antecedent (i.e., repetition) was clearly categorised as a nonmember using 80% and 90% agreement as consensus criteria. Between these two extremes, as expected, we observed a gradual shift in the degree of agreement. The probability of an antecedent being judged a true case of pleasure correlated .89 with the typicality rating obtained from Study 2; Fehr and Russell

TABLE 3
Percentage of participants denying membership in the pleasure category

Item	*%*	*Item*	*%*
Romance	1.6	Chocolate	26.2
Sex	1.6	Sports	26.2
Success	1.6	Christmas	27.9
Sun	3.3	Clothes	27.9
Music	4.9	Exercising	27.9
Travelling	4.9	Reading	29.5
Beach	8.2	Masturbation	29.5
Boyfriend/Girlfriend	8.2	Desserts	31.1
Knowledge	8.2	Art	31.1
Movies	8.2	Literature	34.4
Seduction	8.2	Watching television	36.1
Good grades	9.8	Solitude	36.1
Food	11.5	Going to a café	37.7
Sleeping	13.1	Telephone call to/from family/friends	37.7
Conversation	14.8	Drinking	39.3
Learning	14.8	Shopping	39.3
Parties	14.8	Aromatherapy	39.3
Peace on earth	14.8	Cooking	41.0
Meeting new people	16.4	Candles	41.0
Money	16.4	Cartoons	47.5
Shower	16.4	Ecstasy	52.5
Birthday	19.7	Sales	59.0
Concerts	19.7	Drugs	60.7
Moving into my own apartment	19.7	Computer games	62.3
Writing/receiving letters to/from family/friends	21.3	Prayer	62.3
		Materialism	67.2
Holding a baby	23.0	School	67.2
Equality	23.0	Snow	73.8
Dressing up	24.6	Grocery shopping	75.4
Fireplace	24.6	Repetition	90.2
Popularity	24.6		

(1991) obtained a correlation of .96 between membership probability and typicality rating for types of love.

Assignment to pleasure type. Participants' spontaneous associations with unitary and differentiated pleasures collected prior to the category assignment task were fully consistent with what might be expected for each type of pleasure. For instance, physical pleasure was associated primarily with sex (mentioned 20 times), but was also associated with other items that conveyed the bodily and sensory nature of that pleasure type: food and sports (each 4 mentions), massage (3), touch and taste (4). Similarly, intellectual pleasure was associated with

cognitively demanding activities like reading (5 mentions), conversation (2), challenge (2), playing chess (2), and good grades (2). Social pleasure was associated primarily with friends (11 mentions). Emotional pleasure was associated with specific positive emotions: happiness (5 mentions), and love and peace of mind (each 2 mentions). As for general pleasure, the idiosyncratic antecedents along with the variety of emotion words listed under this category illustrated the catch-all nature of its mental representation and the lack of finer-grained information on the source and nature of the experience. Antecedents mentioned in connection with the general pleasure category were idiosyncratic except for ''pleasing experience'' mentioned twice. Emotions associated with general pleasure and mentioned more than once were fun (5 mentions), excitement, happiness, satisfaction, joy, relaxing, and no stress (each with 2 mentions). Thus, the four differentiated types of pleasure were associated with antecedents and emotion words that form a profile consistent with their theoretical definition. In fact, of all items spontaneously associated with each type of pleasure, none were conceptually or domain-irrelevant.

Table 4 presents the number of participants who either assigned a pleasure antecedent to the general unitary pleasure category or assigned it to one of the

TABLE 4
Number of participant assigning antecedents to pleasure type[a]

Antecedent	*Denied membership*	*General pleas.*	*Physical pleas.*	*Social pleas.*	*Intellectual pleas.*	*Emotional pleas.*
Moving into my own apartment	12	*32*	0	11	0	4
Peace on earth	9	*23*	1	1	5	20
Watching TV	22	*23*	2	6	3	4
Money	10	*22*	7	12	3	7
Christmas	17	*19*	1	15	0	8
Sex	1	3	*46*	0	0	9
Sleeping	8	3	*45*	0	0	4
Shower	10	4	*44*	0	0	2
Masturbation	18	1	*41*	1	0	0
Exercising	17	0	*39*	2	0	1
Sports	16	3	*36*	4	0	1
Food	7	14	*34*	3	0	3
Sun	2	13	*27*	1	1	16
Chocolate	16	11	*23*	1	0	20
Desserts	19	13	*21*	3	0	5
Beach	5	15	*18*	8	0	13
Meeting new people	10	0	0	*48*	2	1
Parties	9	2	2	*46*	0	2
Birthday	12	2	2	*41*	0	4

(Continued)

TABLE 4
(Continued)

Antecedent	*Denied membership*	*General pleas.*	*Physical pleas.*	*Social pleas.*	*Intellectual pleas.*	*Emotional pleas.*
Conversation	9	1	1	*35*	9	4
Going to a café	23	3	1	*32*	0	2
Popularity	15	7	1	*31*	0	6
Travelling	3	10	4	*26*	5	13
Concert	12	6	3	*23*	4	12
Drinking	24	2	11	*22*	0	2
Dressing up	15	7	5	*20*	1	13
Movies	5	12	1	*20*	12	9
Equality	14	12	1	*19*	7	6
Shopping	24	7	3	*18*	0	7
Knowledge	5	0	0	4	*51*	1
Learning	9	0	1	3	*48*	0
Literature	21	1	0	0	*38*	1
Reading	18	2	0	0	*35*	6
Good grades	6	20	0	0	*30*	3
Art	19	5	2	1	*24*	10
School	41	0	0	3	*16*	1
Romance	1	0	2	7	0	*51*
Boyfriend/Girlfriend	5	3	2	4	0	*45*
Holding a baby	14	4	2	0	0	*39*
Music	3	5	1	9	7	*36*
Seduction	5	2	14	5	1	*34*
Writing/receiving letters to/from family/friends	13	1	0	15	1	*30*
Solitude	22	5	3	2	4	23
Success	1	7	1	13	15	*22*
Candles	25	9	5	1	0	*21*
Fireplace	15	9	12	4	1	*20*
Telephone call to/from family/friends	23	4	0	13	0	*20*
Prayer	38	2	0	0	4	*15*
Repetition	55	3	0	1	1	1
Grocery shopping	46	8	2	4	1	0
Snow	45	6	5	0	0	5
Materialism	41	6	3	7	0	4
Computer games	38	4	4	4	9	2
Drugs	37	3	13	5	0	3
Sales	36	12	0	6	3	3
Ecstasy	32	4	12	6	1	6
Cartoons	29	11	0	2	9	10
Cooking	25	12	6	11	3	3
Aromatherapy	24	9	18	1	0	9
Clothes	17	11	12	12	0	8

[a] Sorted by modal pleasure type. $N = 61$, some rows may not add up to 61 because of missing responses.

four differentiated pleasures. In Table 4, antecedents are sorted by the modal type of pleasure to which they were assigned and the number of participants who denied membership (from Study 3a) is indicated as well. Across all participants and all antecedents (61 participants × 60 item assignments), when participants were given the option between general pleasure and explicitly differentiated types of pleasure, they chose to keep the antecedents in the general pleasure category in only 1 out of 4 cases (884 times or 24.15% of all assignment decisions). As Table 4 shows, the General Pleasure category was the modal category for only 11 antecedents whereas for all other antecedents the modal category was one of the four differentiated types of pleasure. Specifically, the physical pleasure category accounted for 19.4% of the cases (711 mentions), as well as 776 mentions or 21.2% for the social pleasure category, 465 mentions or 12.7% for the intellectual pleasure category, and 750 mentions or 20.5% for emotional pleasure.

STUDY 4: SIMILARITY SORTING OF PLEASURE ANTECEDENTS

It is conceivable that the imposition of the four pleasure types derived from the literature and explicitly provided in Study 3b could have biased participants' organisation and mental representations and therefore obscured their true pleasure categories. Study 4 was designed to test whether these four differentiated types of pleasure would also emerge as implicit groupings of pleasure antecedents in the absence of such a demand artifact. Moreover, as per our proposition that pleasure is a hierarchical concept, the possible differentiated pleasures were expected to emerge and be subsumed under a general, unitary representation of pleasure.

Method

Methodology, instructions, and analyses were patterned after Shaver et al. (1987). Participants (n = 75) were tested individually and entered their names in a lottery for cash rewards. The 60 antecedents used thus far were printed on 2.5 inch × 4 inch cue cards. Participants were informed that the words referred to instances of pleasure that had been elicited previously from a group of students like themselves. They were then asked to sort the words into piles such that items in a pile bore more similarity with each other than with items in other piles. No limit was placed on the number of piles allowed. For each participant, a 60 × 60 frequency of co-occurrence matrix was constructed, with 1 indicating that two antecedents were placed into the same category, 0 indicating that they were not. These individual matrices were added across the 75 participants to produce a 60 × 60 matrix in which cell entries ranged from 0 to 75. This last matrix was transformed into dissimilarity measures, which were then submitted to a hierarchical cluster analysis using SASs *proc cluster*.

Results and discussion

Participants took between 20 and 55 minutes to complete the task. Participants, on average, formed 10 categories. The maximum number of categories formed was 21, the minimum was 3 and 6 was the median. Thirty-three was the maximum number of items placed into a single category while 1 was the smallest, which occurred for two different items with two different participants. The results from the cluster analysis are shown in Figure 1 in the form of a dendrogram. The 60 antecedents appear along the bottom in clusters of strength equal to or greater than 35, the strength being indicated by the vertical scale. Thus, within each grouping at the bottom, the average number of respondents placing any two words together in a cluster was at least 35.

Inspection of Figure 1 reveals that the groups of antecedents at the bottom quickly merge into nine larger clusters. These clusters preserve some of the richness and detailed information of the original 60 antecedents. To correctly interpret and label these early clusters, a necessary step in understanding the later stages of agglomeration, we relied primarily on the measure of within-cluster centrality used by Shaver et al. (1987). For each word within a group, this measure is computed by subtracting the average number of co-occurrences with all words outside that cluster from the average number of co-occurrences with all other words within that cluster. This measure constitutes an indication of each word's defining role within a specific cluster. An asterisk indicates the item with the highest centrality measure within each of these first nine clusters. For instance, ''good grades'' has the highest centrality measure of the first cluster. The nine clusters later merge into four higher order groups that, albeit nonperfectly, match reasonably well the four differentiated pleasure types from Study 3b.

To explore further the nature of the four higher clusters, we computed the within-cluster centrality measures for the items now in those clusters. The most central items in the cluster ''intellectual'' were: good grades (20.9), knowledge (19.8), learning (19.2), school (19.2), and success (15.9). The emotional pleasure type was defined by watching television (14.7), movies (13.6), cartoons (12.4), and art (11.0). In the social type, the centrality scores for most items fall at a moderate level (15 of the 21 items have a centrality score between 6 and 9) with ''shopping'' being the most central antecedent (9.8). Finally, physical pleasure was defined by sex (21.9), seduction (21.4), romance (18.4), and boyfriend/girlfriend (18.4). In sum, the four types of pleasures that implicitly underlaid participants' sorting of pleasure antecedents in Study 4 were very much in line with the four differentiated pleasure types to which Study 3's participants were willing to assign pleasure antecedents. At a higher level, intellectual and emotional pleasures were grouped in a cluster (labelled A Figure 1) that could arguably be labelled as ''pleasures of the mind''. The other cluster to emerge at the same level (labelled B Figure 1) grouped the physical and social pleasures, a grouping that would not conform to ''pleasures of the body'' as per prior

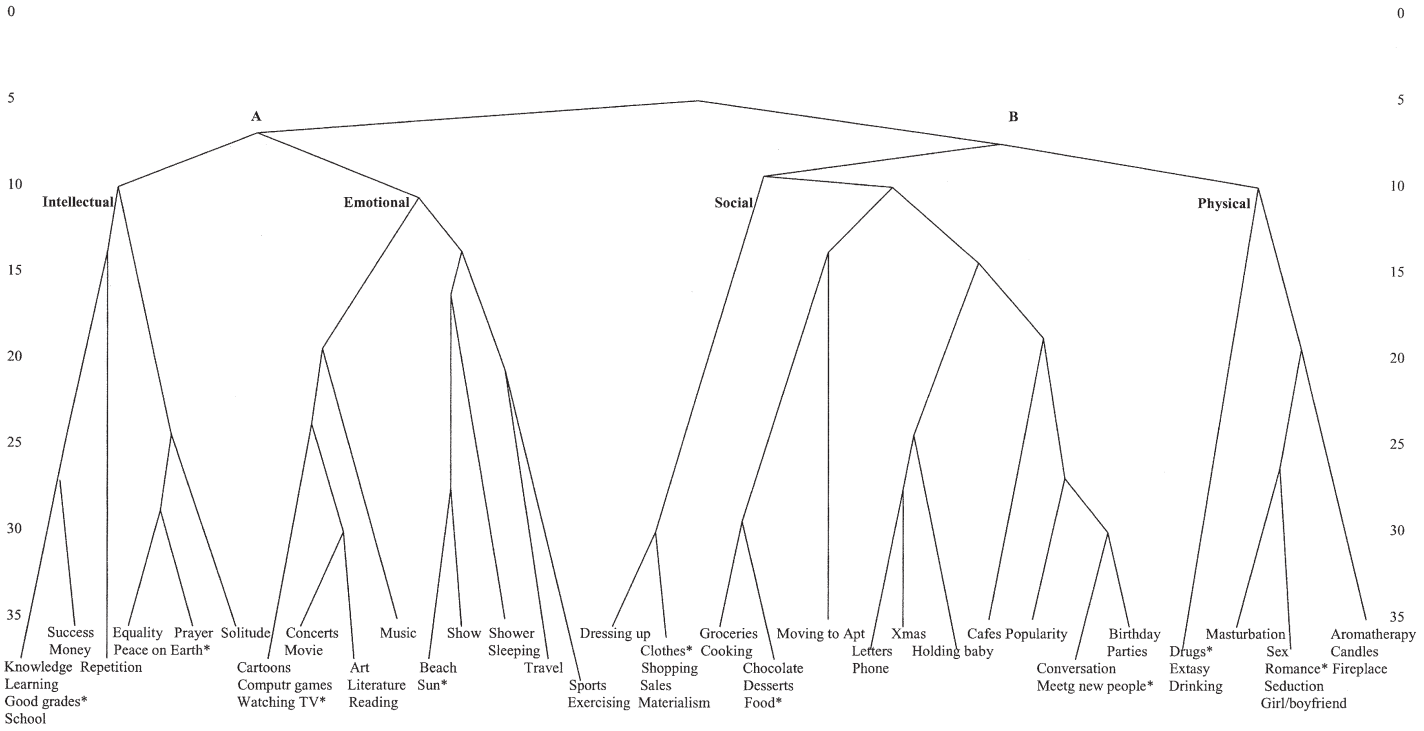

Figure 1. Results of a hierarchical cluster analysis of 60 pleasure antecedents.

theories of differentiated pleasures. Therefore, in follow-up work, we considered the differentiated pleasures that emerged at the four-cluster rather than the two-cluster level. Ultimately, differentiated pleasures were subsumed under the general, unitary pleasure.

We conducted a follow-up study to provide a more formal test of the proposed hierarchical structure of the pleasure category and of the critical role of these four differentiated types of pleasure in structuring the pleasure category. Study 3b has shown that even though participants did not explicitly abstract types of pleasure in forming their memory representation of pleasure, they were nonetheless able to relate explicitly provided labels to their implicit organisation of the pleasure category. In this follow-up study, different participants (n = 31) were asked to perform category membership judgment (yes/no decisions) as in Study 2, but this time on a list of 30 possible types of pleasure taken from the corpus of Study 1, including the four differentiated types of pleasure tested in Studies 3 and 4. These four types of pleasure emerged with the highest agreement: physical and intellectual pleasures were denied membership to the pleasure category by only one participant, social and emotional pleasures by three participants. The types of pleasure on which the highest proportion of denial of membership was observed were embarrassing pleasures, with 20 participants denying membership, and stressful pleasures with 24 participants denying membership. Between these extremes, we could observe a gradual shift in category membership agreement, as was the case for pleasure antecedents in Study 2.

STUDY 5: COMMON AND UNIQUE EMOTIONAL QUALITIES OF UNITARY AND DIFFERENTIATED PLEASURES

Results of Study 4 support the proposition that pleasure is a hierarchical concept with the general, unitary representation of pleasure differentiating itself into four types that laypersons recognise as the most typical of the category with a high level of agreement (i.e., intellectual, emotional, social, and physical). If affective qualities are key features in specifying hedonic experiences, significant insights into the representation of pleasure can be gained from identifying the emotional qualities that might be common to unitary and differentiated pleasures and those that might vary between the two levels in the hierarchy, or those that might be uniquely associated with specific differentiated types. Moreover, the discriminative role of affective qualities in hedonic experiences also suggests that unitary pleasure and the most typical types of pleasures would tend to be associated with a constellation of affective responses that does not characterise less typical pleasure types. In Study 5, participants provided typicality ratings for a set of affective qualities in the context of one of seven types of pleasure (i.e., the general pleasure, the four differentiated pleasures, and two atypical types of pleasure).

Method

Participants (n = 172) were randomly assigned to one of seven pleasure ''conditions''. The pleasure conditions included the general pleasure level, each of the four differentiated pleasures (i.e., physical, emotional, social, intellectual), and the two types of pleasure conditions that emerged as the type of pleasures that were the poorest instances of the pleasure category in the follow-up study above (i.e., embarrassing and stressful). In each condition, participants were presented with the same list of 35 feelings and emotion words (same random order for each participant), chosen from the corpus of Study 1 and its two follow-up studies to include a broad range of frequencies of mention. The instructions were similar to those of Study 2, with minor modifications. Participants were asked to rate each emotion word on a scale from 1 (*extremely poor example of the kinds of emotions I have when experiencing ____ pleasure*) to 6 (*extremely good example of the kinds of emotions I have when experiencing ____ pleasure*).

Results and discussion

Analysis of variance with type of pleasure as a between-participants factor was conducted on the typicality ratings of the 35 emotion words. Average typicality ratings and results of *post-hoc* comparisons using Fisher's LSD appear in Table 5 for general pleasure, the four differentiated subcategories (i.e., physical, social, intellectual, and emotional), and the two less typical pleasures (i.e., embarrassing and stressful). We use the general unitary pleasure level as the reference, and highlight in the table all typicality ratings that are significantly different from this reference. Other pairwise comparisons of interest are presented below.

Before analysing the unique affective makeup of the four differentiated pleasure types, it is informative to consider emotions that are common to all pleasurable experiences, including those that are less typical. As expected, very few affective qualities did not vary across all seven subcategories. These consisted of anger, lazy and sleepy, figuring equally low typicality, with, in addition, surprise and heart-pounding, rated at a moderate level of typicality. When only unitary and the four differentiated pleasures were considered, common affective qualities entailed both highly typical positive emotions and highly atypical negative emotions. Positive affective qualities that were highly typical and common between unitary and the four differentiated pleasures were excitement, fulfillment, self-confidence, self-esteem, relaxed, ecstatic, bliss, stress-free, and content. Negative affective qualities were pain, vulnerability, fear, nervousness, and crazy feelings.

What unique emotional qualities distinguished, in the laypersons' mind, the experience of general unitary pleasure from the differentiated pleasures? Intellectual pleasure presented the largest number of different affective qualities when compared to the general unitary pleasure. The subjective experience of intellectual pleasure was characterised by more sadness and less of the following

emotions and feelings: altruism, caring, happiness, horny feelings, joy, love and warmth. Participants' representation of physical pleasure was characterised by more energetic feelings and less accomplishment, less pride, and less happiness than that of general unitary pleasure. Social pleasure also was associated with more energetic feelings than general unitary pleasure, but less love and less peaceful feelings. Finally, emotional pleasure was marked by more relief, more sadness, more greed, and more guilt than the general unitary pleasure.

Further insights into the differentiation of pleasurable experiences can be gained from comparing the pattern of affective qualities of each differentiated pleasure. Such comparisons revealed that physical and intellectual pleasures emerged as the most clearly differentiated types as a set of unique affective qualities could be identified on which they differed from all other types. Specifically, physical pleasure distinguished itself by more heart-pounding and horny feelings, less accomplishment and less pride than all other types of pleasure. Physical pleasure also scored higher on caring, energetic, joy, love, and warmth than intellectual pleasures but also displayed less sadness, less self-confidence, and less self-esteem than intellectual and emotional pleasure. Intellectual pleasure was associated with less caring, less joy, and less warmth than other types but also with more pride, self-confidence, and accomplishment than physical pleasure. Although the profile of emotional pleasure reveals no affective qualities on which it differs from all other types, it is unique insofar that it contains more ''cognitive'' emotions (i.e., pride, self-confidence, self-esteem), more negative emotions like sadness and guilt, and less arousal states (e.g., heart-pounding). Social pleasure was associated with more altruism, caring, joy and happiness than intellectual pleasure, and less love, peacefulness, and accomplishment than emotional pleasure.

GENERAL DISCUSSION

The results of these five studies offer a comprehensive map of layperson's concept of pleasure in terms of both its content and structure. Instances of the pleasure concept collected in Study 1 were not types of pleasure as might have been expected in taxonomic categories but instead consisted of objects, events or persons that had been sources of pleasure. This suggests that the pleasure category, like emotional response categories, are formed at an implicit level where various instances are grouped on the basis of common phenomenological qualities of the affective experience they induce. Studies 2 and 3a showed that within the pleasure category, antecedents varied widely in terms of typicality and category membership, reflecting graded structure and fuzzy boundaries in line with prototype theory. Results further revealed that participants, either upon presentation of explicit verbal labels in Study 3b, or implicitly in the sorting task performed in Study 4, exercised discriminative judgement when assigning a large proportion of hedonic antecedents to the four differentiated pleasures.

TABLE 5
A posteriori comparison of affective qualities of seven pleasure types

	Pleasure type							
Emotion word	*General*	*Physical*	*Social*	*Intellectual*	*Emotional*	*Embarrassing*	*Stressful*	*F*(6 171)
Accomplishment	*4.68*$_{ad}$	*3.03*$_{b}$	3.86$_{d}$	5.17$_{a}$	5.13$_{a}$	*1.96*$_{e}$	4.35$_{ad}$	16.94***
Altruism	*3.57*$_{a}$	2.91$_{ac}$	3.52$_{a}$	*2.62*$_{bc}$	3.55$_{a}$	*2.00*$_{b}$	*2.43*$_{bc}$	3.96**
Anger	*1.26*$_{a}$	1.97$_{ab}$	*2.36*$_{bc}$	*2.21*$_{bc}$	*2.21*$_{bc}$	*2.20*$_{bc}$	2.05$_{ac}$	1.56
Anxiety	*1.30*$_{a}$	2.09$_{a}$	1.86$_{a}$	2.08$_{a}$	2.17$_{a}$	*3.44*$_{b}$	*3.24*$_{b}$	5.58***
Bliss	*4.17*$_{a}$	4.22$_{a}$	4.18$_{a}$	3.74$_{ab}$	4.46$_{a}$	*2.92*$_{b}$	*3.05*$_{b}$	3.23**
Caring	*4.17*$_{a}$	3.56$_{a}$	3.91$_{a}$	*2.67*$_{b}$	3.54$_{a}$	*2.00*$_{b}$	*2.43*$_{b}$	8.30***
Content	*3.87*$_{a}$	3.61$_{a}$	3.50$_{a}$	3.87$_{a}$	3.88$_{a}$	*2.48*$_{b}$	*2.52*$_{b}$	4.22**
Crazy	*2.61*$_{a}$	3.09$_{ab}$	3.05$_{ab}$	3.04$_{ab}$	2.67$_{a}$	*4.00*$_{c}$	*3.71*$_{bc}$	2.45*
Ecstatic	*4.30*$_{ad}$	4.21$_{ad}$	4.20$_{acd}$	3.63$_{ab}$	4.9$_{d}$	*3.29*$_{bc}$	*2.90*$_{b}$	3.67**
Energetic	*3.78*$_{a}$	*4.58*$_{b}$	*5.09*$_{b}$	3.38$_{a}$	3.46$_{a}$	*2.56*$_{c}$	3.67$_{a}$	8.28***
Excitement	*5.30*$_{a}$	5.00$_{a}$	5.05$_{a}$	4.71$_{ac}$	5.08$_{a}$	*3.80*$_{b}$	*4.07*$_{bc}$	4.37***
Fear	*1.43*$_{a}$	1.67$_{a}$	1.59$_{a}$	1.88$_{a}$	1.96$_{a}$	*2.80*$_{b}$	*2.86*$_{b}$	3.85**
Fulfilment	*5.09*$_{a}$	4.45$_{a}$	4.36$_{a}$	5.08$_{a}$	4.83$_{a}$	*2.60*$_{b}$	*3.45*$_{c}$	11.12***
Greed	*1.48*$_{a}$	1.74$_{ac}$	1.91$_{ac}$	1.75$_{ac}$	*2.21*$_{cb}$	*2.84*$_{b}$	2.10$_{ac}$	3.10**
Guilt	*1.48*$_{a}$	1.39$_{a}$	1.73$_{ac}$	1.29$_{a}$	*2.38*$_{bc}$	*3.72*$_{d}$	2.00$_{ac}$	10.60***
Happiness	*5.48*$_{a}$	*4.67*$_{bd}$	5.41$_{a}$	*4.45*$_{b}$	5.21$_{ad}$	*2.88*$_{c}$	*3.00*$_{c}$	17.60***
Heart-pounding	3.70$_{ab}$	4.16$_{bc}$	3.05$_{a}$	3.50$_{ac}$	3.57$_{ac}$	4.28$_{bc}$	4.62$_{b}$	2.67*
Horny	*4.17*$_{ac}$	4.84$_{a}$	3.36$_{c}$	*2.33*$_{b}$	3.71$_{c}$	4.16$_{ac}$	3.57$_{c}$	5.54***
Joy	*5.52*$_{a}$	5.00$_{a}$	5.05$_{a}$	*4.00*$_{b}$	5.17$_{a}$	*2.56*$_{c}$	*2.90*$_{c}$	20.58***
Lazy	2.18	2.09	2.27	1.67	2.42	2.36	2.05	0.87

Love	*5.48*$_{a}$	5.09$_{ac}$	*4.45*$_{bc}$	*3.83*$_{b}$	5.50$_{a}$	*2.88*$_{d}$	*4.19*$_{b}$	11.63***
Nervousness	*1.48*$_{a}$	2.22$_{ac}$	2.14$_{ac}$	1.96$_{ad}$	*2.50*$_{cd}$	*4.16*$_{b}$	*2.90*$_{c}$	9.12***
Pain	*1.14*$_{a}$	1.61$_{a}$	1.86$_{abc}$	1.71$_{ab}$	1.75$_{ab}$	*2.32*$_{bd}$	*2.57*$_{cd}$	2.99**
Peaceful	*4.35*$_{a}$	3.83$_{ab}$	*3.32*$_{bd}$	4.04$_{ad}$	4.57$_{a}$	*2.08*$_{c}$	*1.90*$_{c}$	12.50***
Pride	*4.48*$_{a}$	*3.47*$_{b}$	4.41$_{a}$	4.71$_{a}$	4.79$_{a}$	*2.16*$_{c}$	*3.48*$_{b}$	11.08***
Relaxed	*4.48*$_{a}$	4.42$_{a}$	4.55$_{a}$	4.08$_{a}$	4.63$_{a}$	*2.12*$_{b}$	*1.62*$_{b}$	17.78***
Relief	3.35$_{ac}$	3.87$_{ab}$	3.73$_{ab}$	3.13$_{bc}$	4.17$_{a}$	2.60$_{c}$	2.48$_{c}$	3.84**
Sadness	*1.09*$_{a}$	1.12$_{a}$	1.64$_{ab}$	*1.83*$_{bc}$	*2.04*$_{bc}$	*2.4*$_{c}$	1.71$_{ab}$	4.07**
Self-confidence	*4.52*$_{ac}$	4.06$_{a}$	4.67$_{ac}$	4.92$_{c}$	5.00$_{c}$	*2.12*$_{b}$	*3.24*$_{d}$	14.33***
Self-esteem	*4.48*$_{ab}$	3.88$_{ad}$	4.41$_{ab}$	4.71$_{b}$	4.75$_{b}$	*2.21*$_{c}$	*3.29*$_{d}$	11.22***
Sleepy	2.17$_{ab}$	2.56$_{a}$	1.59$_{b}$	1.88$_{ab}$	1.92$_{ab}$	1.84$_{b}$	2.29$_{ab}$	1.51
Stress-free	*4.09*$_{a}$	4.00$_{a}$	3.91$_{a}$	4.25$_{a}$	4.58$_{a}$	*2.12*$_{b}$	*1.52*$_{b}$	13.33***
Surprise	3.70	3.22	3.09	3.17	3.71	3.16	3.76	1.03
Vulnerability	*1.39*$_{a}$	1.94$_{ac}$	1.77$_{ac}$	1.50$_{a}$	1.79$_{ac}$	*3.00*$_{b}$	*2.52*$_{bc}$	4.30***
Warm	*4.04*$_{a}$	4.67$_{a}$	4.73$_{a}$	*2.83*$_{b}$	4.29$_{a}$	*2.04*$_{c}$	*1.95*$_{c}$	20.74***

The *F*-ratio is derived from a one-way analysis of variance across all seven pleasure types. Means with different subscripts were significantly different using Fisher's LSD ($p < .05$). Means in italics indicate significant differences with the general pleasure type. * $p < .05$; ** $p < .01$; *** $p < .001$.

Results of both Studies 3 and 4 revealed the hierarchical structure of the pleasure concept where unitary pleasure differentiated itself into intellectual, social, emotional, and physical subtypes. Those four subtypes emerged as the clearest types in participants' representations obtained in the follow-up to Study 4. Finally, Study 5 showed that laypeople's representations of unitary and differentiated pleasures shared a set of common positive affective qualities but also that they can be distinguished on the basis of unique affective qualities.

How does the differentiation in laypersons' conception of pleasure observed in these five studies compare to prior theories and conceptual frameworks? The four differentiated pleasures observed in these studies are consistent with the most recent typologies proposed by Kubovy (1999) and Tiger (1992). The various antecedents participants associated with intellectual and emotional pleasures are reminiscent of Duncker's (1941) accomplishment and aesthetic pleasures respectively, combined by Kubovy (1999) under the label of pleasures of the mind. Physical pleasures emerged here from intense sensations, whether from natural or artificial sources. Finally, social pleasures emerged, as proposed by Kubovy (1999) and Tiger (1992), from activities shared with friends. The intermediary two-cluster level that emerged between the four differentiated pleasures and the general unitary representation in Study 4 was partially reminiscent of the mind-vs.-body dichotomy. For instance, intellectual and emotional pleasures, both stemming from antecedents that involved some ''work of the mind'', were combined into a common cluster. Social and physical pleasures combined into a second cluster that less faithfully corresponds to pleasures of the body. Antecedents like shopping, phone conversations, parties, or other activities with friends and family that were at the core of social pleasures do not exactly qualify as pleasures of the body. However, as we elaborate below, the common evolutionary root shared by physical and social pleasures may account for their membership in a single cluster.

According to Damasio (1999), pleasures that arise from social and physical antecedents are possible embodiments of the evolutionary role of pleasure. Research in affective neuroscience (for a review, see Berridge, in press) has shown that the same brain structures and neural substrates are at play in many types of sensory pleasures (physical in the present terminology) as well as in pleasures derived from social antecedents (including maternal interaction with infants, and video games). Damasio further suggests that the generation and experience of such evolution-based pleasurable states entail anatomical structures and neural substrates that are not the same as those involved in pleasurable states that require more complex processes, like the ability to sense beauty or to strive from sophisticated personal achievement. A similar distinction between the low and the high road to affective experiences has been proposed by LeDoux (1996) in the context of fear.

The patterns of affective qualities of the differentiated pleasures that emerged in Study 5 reflect the distinction between physical and social pleasures as

simpler, evolution-based pleasures and intellectual and emotional pleasures as more complex ''pleasures of the mind''. For instance, physical pleasure appeared as the least affectively complex pleasure with distinctive affective qualities primarily positive and related to physiological responses (e.g., more heart-pounding) and without the ambiguity of negative emotions. These results are also consistent with propositions by various scholars (e.g., Bentham, 1781/1988; Rozin, 1999) that physical pleasures are more primitive and less complex than other pleasures. After physical pleasure, social pleasure was the second less complex differentiated pleasure and likely to possess the strongest and most automatic approach-inducing power. By contrast, emotional pleasures encompassed negative emotions like sadness and guilt and positive emotions that entailed complex appraisal. Distinctive features of intellectual pleasure, when compared to general pleasure, included sadness and many positively valenced qualities like happiness, whereas joy and warmth were atypical of this category. It is therefore to be expected that one's approach trajectory toward antecedents of intellectual and emotional pleasures may be less simple and less straightforward than for antecedents of physical pleasure.

Meaningful distinctions as to the way pleasure arises and operates could also be made between physical and social pleasures, or between intellectual and emotional pleasures. For instance, the role of alliesthesia, that is, the influence of physiological states like hunger, thirst, or craving (Cabanac, 1971), is likely to be more central in physical pleasure than in social pleasure. As for intellectual and emotional pleasures, even though both seem tied to more ambivalent affective make-up and more complex appraisals, they are likely to differ in terms of the temporal unfolding of their experience. For emotional pleasure, the subjective experience may begin with an important period of joyful anticipation of the actual encounter with the hedonic stimulus, whereas for intellectual pleasure, this anticipation is likely to be more dreadful than joyful. Such subtle approach-avoidance nuances underscore the need to develop a more systematic mapping of every level in the pleasure hierarchy, which could provide significant insights into the motivational power of pleasure and its various forms of expression.

Our results, in line with prior research by Higgins, Niedenthal, and their collaborators, suggest that taking into account only the overall goodness-badness of stimuli does not capture the full psychological reality of the hedonic experience and the ways in which this subjective experience influences decision making and behaviour. In all studies, lay participants did not conceive of pleasure as simply a unitary phenomenon, independent of its antecedents and its experiential qualities. Instead, their mental representations included differentiated pleasures as well as a higher level of general, unitary pleasure. If we are to move beyond the current assumption that differentiated pleasures of the same intensity have the same approach-inducing power, future work is needed to explore further the implications of the view of pleasure as a hierarchical concept for models of decision making and behaviour.

A first set of questions to be addressed pertains to the combinatory rules that might prevail when different sources of pleasure combine: To what extent are differentiated pleasures substitutable to each other in making decisions and motivating behaviour? How do differentiated types combine during a single pleasurable episode? Can one simultaneously experience intellectual and physical pleasure? Would they have synergistic effects or would they compete against each other? Although background music would be pleasant for a couple on a romantic date, some French gastronomes argue that one should not hear the buzz of a fly in a dining room, much less background music. How does the interaction of different types of pleasure and their temporal unfolding influence the actual experience and one's evaluation thereof? In the end, can the pleasure of playing with a cuddly pet replace or be substituted by other pleasures, such as a walk in the park, a favourite musical selection, a good book, or the company of friends, assuming that these are rated as equally pleasurable and costing approximately the same? As our results suggest, the empirical answer to such questions requires a better understanding of when and how distinctive experiential qualities of differentiated types of pleasure combine into a single, unitary summary that eventually guides judgement and behaviour.

On this issue, results from animal studies provide valuable insights. Shizgal and Conover (1996) have studied pleasure (more correctly, the computation of utility) with rats in a series of studies in behavioural neurobiology. Based on experiments on the relationship between the rewarding effects of electrical brain stimulation and gustatory stimuli, they proposed that brain stimulation reward arises from the electrical activation of neurons that convey a unidimensional representation of the utility of objects. It is the unidimensional character of this encoding that enables the electrical stimulation to produce a meaningful signal. However, they argue that survival and adaptive choices rely on multidimensional processing at earlier stages when physiological feedback exerts its specific influence on goal selection. For choice to be adaptive, the representation of the stimulus must retain qualitative information reflecting level of need, biological benefits, etc.

The question remains, however, for animals as well as for human beings, as to what is the actual contribution of unitary and differentiated components of pleasure that makes approach-avoidance responses most adaptive. Studies looking at expectations of monetary gains and losses (Shizgal, 1999) suggest that rewards of different kinds involve overlapping patterns of neural activation. Shizgal proposed a three-channel model that recognises the common (unitary) nature of stimuli while allowing for differentiation at early stages of processing. Perceptual channels handle perceptual attributes and provide objective information. For choice to be adaptive, the distinct qualities of stimuli are preserved in an intermediate channel enabling the animal to account for type, amount, and even timing of reward. Finally, an action-oriented evaluative channel collapses

multiple attributes of a stimulus into a single unidimensional signal. Moving from the intermediate to the action-evaluative channel is most probably when the specific information contained in the differentiated channel blends into a unitary signal of pleasure intensity. In humans, these issues have hardly begun to be addressed.

Although current research offers a reasonable map of the brain and how it processes sensory pleasures, there is little experimental evidence of as to how it processes other types of pleasures (see Berridge, in press). As for the integrative processes among various pleasure antecedents, based on clinical evidence, Damasio (1999) suggests that such second order, integrative processes entail interactions among various brain regions and that the cingulate cortex may play a central role. However, precise specification of these integrative processes and other unresolved aspects of hedonic information processing must await theoretical and empirical developments, especially in terms of new measures of subjective experience and improvements in brain imaging technology.

The contribution of the present results should be interpreted within the usual limitations of our methodology. A first limitation comes from the reliance on cognitive representations of pleasure. Simply asking people what they have in their mind when they experience pleasure cannot produce a clear and complete picture of what pleasure is and is not. For many people, emotions in general, and pleasure in particular, are hard to verbalise. As LeDoux (1996) suggested, nonverbal and unconscious systems underlying hedonic experiences may render some dynamics inaccessible to techniques such as the one used here. Recent research has provided empirical evidence for the behavioural impact of such unconscious pleasurable experiences (Berridge & Winkielman, this issue). In addition, memories are imperfect reconstructions (Bartlett, 1932). Thus, extension of our work using different subject pools and methodologies is needed. Recent developments in brain imaging could help trace neurological processes and link these to the subjective experience, thereby allowing more in-depth analyses of the contributions and operation of unitary and differentiated pleasures. A second limitation stems from the fact that we explored the hierarchical structure of the pleasure category without testing whether the differentiated pleasures that emerged at the intermediate level correspond to the basic level as defined by Rosch (1975). Despite their limitations, the present studies expand the theoretical understanding of pleasure by showing that, in laypersons' conception, pleasure is at the same time of one and of many kinds. Taking into account this multilevel representation of pleasure in future research may well lead to more complete interpretations and conclusions with regards to the approach-inducing power of pleasure and its various behavioural manifestations.

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