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The Complexity of Social Norms

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Chapter 1
The Conundrum of Social Norms

Maria Xenitidou and Bruce Edmonds

Motivation

Consciously or otherwise people decide what to do bearing in mind what they think is acceptable/unacceptable to others around them. These standards of acceptability can be called social norms. Thus, the idea of social norms lies at the heart of sociology—how individual behaviour is constrained by (the individual's view of) the expectations of others. There is often considerable agreement between participants as to when a social norm is violated, and people report that what they perceive as social norms impact upon them both in thought and action. Some are bold enough to call social norms "the grammar of society" (Bicchieri, 2005).

However, simplistic conceptions of social norms are plagued with difficulties. Their independent existence as reified entities to be labelled and tracked is problematic. What seems obvious to all about what a social norm is tends to dissolve upon closer examination. What is acceptable or not seems very changeable according to the time, place and social context of any action. They critically rely on the perceptions of individuals, and yet accounts of norms as only conventions are insufficient to explain their persistence. For all these reasons (and more) norms have become problematic to study and so, in the last 20 years, have been relatively neglected.

Despite all these difficulties, however, what we call social norms clearly have both social efficacy and a high level of inter-subjective reality. In Chap. 4, Chris Goldspink gives an example of a person arriving in the UK from New Zealand and trying to start a conversation with strangers waiting at a bus stop. Disapproval of this innocent action

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was immediately apparent—whatever a social norm *is* it has force, in this case stopping a New Zealander from trying to start casual conversations with people he does not know. Second, when that person talked to others about his experience they all reported that what happened was normal for the UK, indeed expected—whatever a norm *is*, it derives from a near unanimous recognition across a whole group of people (even those who don't hold with the norm recognise its existence). This combination of social efficacy with widespread inter-subjective recognition gives social norms a *reality* that is in stake contrast to the difficulties in identifying and studying them. Ultimately, one cannot pass judgement upon the meaningfulness of a phenomena's practical existence on the basis of the difficulty of its identification—just because disease is spread in complex ways by complex organisms that are difficult to detect does not mean that "disease" is not a meaningful idea[1] or that disease is not real.

This book does not flinch from the complexity of the phenomena it is interested in. It brings together a disparate set of authors, each of whom accepts the *reality* of social norms in different ways but who also seek to explore their complexity. Part of this complexity lies in the way that what is recognised and identified as social norms is an abstraction of a complex and dynamic interaction of many aspects and levels. Social norms emerge and dissolve over time and within different groups of people both cognitively and socially, so it is these complexities that this book investigates. In this way this book aims to play a part in revitalising interest in social norms by taking a complex and dynamic perspective, replacing a static picture of norms as social *objects* with norms associated with a socially recognisable complex—an intertwined set of cognitive and social processes partially locked in by emergent and immergent forces.

This viewpoint reflects some of the concerns of "complexity science". Usually, "complexity science" has emphasised a purely bottom-up approach, whereby complex phenomena might result from the interaction of simpler parts—in other words, they *emerge*. However, for social scientists this is only half of the picture, with the other half being how society constrains the actions of individuals—what has been called immergence or "downward causation" (Campbell, 1974). Although many ideas from complexity science have been applied to social phenomena in an over-simple and reductionist manner, recent developments have resulted in the beginning of a synthesis with other social science approaches. So that richer and more descriptive approaches to social phenomena are used along with dynamic approaches. This goes to the heart of social science because it allows explicit explorations of how interaction at a micro-level leads to the emergence of macro-phenomena and how the macro-level, societal trends and institutions can act back upon the micro-level interactions.

Thus, this book does not restrict itself to the views that derive from "complexity science". Rather, it seeks a new alignment, where many processes and mechanism are reconsidered, under the umbrella label of "social norms" inspired and informed by many developments including "complexity science". In this way this important set of phenomena can, once again, play a central part in the understanding of society,

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[1] Of course, in an age before appropriate tools to enable effective study of such phenomena it might mean that one decides that it is not feasible to attempt a study of it. Indeed, it might be that there are *many* cases where the identification of social norms is problematic, but these do not make them unreal.

albeit in a complex, dynamic and context-dependent manner. This volume collects together a variety of different approaches to norms, all of which go beyond simplistic or static pictures of social norms, but rather as: constantly changing, shifting over time and socio-cultural contexts, both appearing and being passed over. The volume aims to re-invigorate the study of norms and normative behaviour by allowing these complexities back into the picture.

The Issues

This book starts from the assumption that normative behaviour—behaviour that is characterised by its adherence to established standards of correctness and propriety—is integral to all "cultures" or "folk ways". Normative behaviour is revealed in everyday discourse, for example in the negotiation of antithetical norms (e.g. providing for one's family by stealing versus committing a crime), the bewailing of the breakdown of social norms (e.g. when someone jumps a queue at a bus stop) or in seeking to establish new norms (e.g. drinking and driving, or speeding).

This book explores the view that normative behaviour is a part of a complex of social mechanisms, processes and narratives that are constantly shifting. From this perspective, norms are not a kind of self-contained social object or fact, but rather an interplay of many things that we label as norms when we "take a snapshot" of them at a particular instant. Further, this book pursues the hypothesis that considering the emergent and dynamic aspects of these phenomena sheds new light on them.

The sort of issues that this perspective opens to exploration include:

- Under what circumstances, what combination of processes and factors will result in something we call a social norm?
- How do new social norms emerge and what kind of circumstances might facilitate such an appearance?
- When do existing social norms lose their power, becoming formalised, empty or simply ignored?
- To what extent are social norms linked to particular groups or societies?
- How context-specific are the norms and patterns of normative behaviour that arise?
- How does the cognitive and the social aspects of norms interact over time?

How Have These Questions Been Approached by Different Disciplines

Social norms have primarily pre-occupied sociology, psychology, economics, politics, international relations law and—to a lesser extent in recent times—philosophy. In sociology, the decline of the influence of functionalism saw a parallel decline in discussions and work on social norms. Michael Hechter and Karl-Dieter Opp (2001) who made this observation, focused on norm emergence subscribing to the

instrumental theory of the emergence of norms. Their book includes reviews of existing theory and research on social norms in sociology, law, economics and game theory and focuses on the emergence of norms from the perspectives of: institution-alism and individualism, social networks, evolutionary psychology and behaviour-based and externality-based explanations. However, an evaluation of the developments in the study of norms is missing as no associations or classifications based on underlying criteria are made other than the topic of *norm emergence* itself and a general emphasis on an *instrumental* view of norms. Christina Bicchieri (2005) has focused on norms as a system of rules which are not written but which are implicit in the operations of society and define society and the way in which human groups live. The emergence of, adherence to and demise of social norms are seen from a *socio-cognitive* perspective, and a *game theoretic* approach is employed to capture the dynamics of these processes. Bicchieri (2005) places crucial emphasis on the definition and classification of norms; informal norms are classified into: social norms, conventions and descriptive norms. Norms appear to be treated as self-fulfilling expectations visualised in coordination games taking into account how situations are categorised and which scripts are subsequently activated. Therefore, context and situated meanings are taken into account and explored experimentally using the Ultimatum, Trust, Dictator and Social Dilemma games. Thus, although the Bicchieri (2005) examines the dynamics of the emergence of, adherence to and demise of social norms, her work has focused on a single perspective and a single approach—social cognition and game theory, respectively (cf. Chap. 3).

In psychology, the study of social norms has remained within a cognitive perspective, which has hindered broader attempts to conceptualise social norms (see, for example Raz, 1999; Terry & Hogg 2000; Dubois 2002 cf.; Howitt et al., 1989). Raz (1999) analyses the role of reason and exclusionary rules, "paving the way to a unified normative account". *Games* are used as to exemplify normative systems, and the analysis extends to some aspects of normative discourse. Thus, this looks at the roots of normative reasoning mostly from the *individual* point of view. Although the book touches on dynamic aspects, it is primarily *structural* in its approach. Terry and Hogg (2000) bring together attitude researches on how the social context in the form of social norms and group membership may influence attitudes. The book emphasises a *socio-cognitive* perspective and includes research in developmental psychology, self-identity perspectives, social identity theory and self-categorisation theory, cognitive dissonance theory and a connectionist approach to cognitive modelling. While there is an emphasis on context (see also Bicchieri, 2005), it is restricted to the socio-cognitive perspective. Dubois' collection (2002) focuses on how behaviours are socially regulated, starting from the premise that norms not only affect what we do but also how we think and the judgments we make. The collection seeks to establish that the *social judgment norm construct* and the *socio-cognitive* approach in which it is embedded explains social thinking in diverse contexts. The current volume is different from this in its emphasis on the emergence of normative patterns within a fundamentally dynamic approach.

Whilst philosophy seems to have abandoned discussions and work on norms (cf. Critto (1999) who discusses the scales that societies use to effect social change,

focusing on Argentinean society), economics, politics, international development and law have engaged in discussions and scholarly activity on norms, but from within their own subject area. For example, Posner (2002) looks at the relationship of law to social mechanisms such as norms, asking what the role of law in a society in "which order is maintained mostly through social norms, trust and non-legal sanctions" might be. Thus, it looks at how the law might support or undermine social norms. This work considers many aspects of life from the perspective of the impact of laws, including game-theoretic approaches, but does not take a fundamentally dynamic view (Posner 2007 covers the same area between *law and norms*). Hetcher (2002) looks at the role of laws across the Internet, particularly those to do with privacy and tort law. It again uses a *game-theoretic* framework. Perkins (2003) has focused on interventions using social norms to try and reduce substance abuse by young people. Juètting et al. (2007) consider how social norms might hinder or help the development of countries with weak institutional structures. Platteau's earlier book (2000) on the same subject draws on his fieldwork, arguing that *norms and institutions* are shaped by a complex of physical and social conditions. Finally, the study of social norms has attracted complexity and computer scientists. For example, Christina Bicchieri, Richard Jeffrey and Brian Skyrms (1997) have taken a dynamic approach from a largely *game-theoretic* perspective, looking at some iterated prisoner's dilemma games and similar simulations and analyses.

Overall, the account above indicates a strong concentration of studies on norms from instrumentalist, socio-cognitive and game-theoretic perspectives. It is for this reason that we feel re-starting the discussion on social norms from the dynamic, complexity viewpoint is needed, bringing different methodological and theoretical perspectives together as well as theoretical and methodological discussions on norms from a variety of substantive areas. These include: philosophy and sociology, especially new epistemologies and methods emphasising a processual view of social phenomena; social psychology, especially the study of social and group influence processes; computational and institutional economics, especially focusing on the processes of self-organisation; politics and international relations, especially on the processes of social order and control; criminology and law; computer—including artificial intelligence (AI)—and complexity sciences and new epistemologies and methods of studying norms; simulation approaches and/or the combination of simulation methods with other methods and, overall, the social effects of social norms, why they might appear or disappear.

The Structure of the Book

The key idea of this book is to show how a dynamic and complex approach to social norms is inherent in a number of different developing approaches. Thus, the core of the book is a collection of chapters describing these approaches allowing commonality between these approaches to be clear. This core is framed by an introduction and some synthetic critical pieces reviewing these, drawing out the synergies, compatibilities and differences.

The current, first chapter is an introduction to the book. Chapter 1 sets the scene by reviewing the history of thought about norms in the social sciences, arguing for the centrality of norms, but as an emergent phenomena resulting from underlying dynamic and complex phenomena.

Parts I & II constitute the core of the book. These consist of a series of approaches to the study and understanding of norms each coming from a different direction and tradition, but all taking a new view of norms as an umbrella terms for a set of complex social and individual phenomena.

Part I: *The Complex Roots of Social Norms* includes five chapters that emphasise different perspectives that unearth some of the sources and reasons for the nature and complexity of social norms. These viewpoints into the complexity of norms are far from contradictory, but exactly how all these pieces fit together is not entirely clear, leaving some room for subtle tensions between these contributions.

First, Wesley Perkins (Chap. 2) registers a case for a dynamic view to norms by discussing the extent to which group norms are misperceived by group members and the implications of this perceptual error—"reign of error" as he calls it—for personal actions that are presumed to be influenced by norms. The theoretical case draws on extensive empirical research on peer risk behaviour norms among youth and young adults. The chapter aims to establish a link between perceptions, attitudes and behaviour positing the "problem" of misperceptions as one of the reasons why norms are dynamic—the gap between perception of self and others in terms of norms of behaviour as the drivers behind norm lock-in, change and intervention.

In Chap. 3, Cristina Bicchieri and Hugo Mercier argue for a relationship between norms and beliefs and introduce the notions of discussion and deliberation as the means to achieve change through arguments. They start from the premise that social norms—behavioral rules supported by a combination of empirical and normative expectations—play an important role in both explaining and changing negative practices. Norm change or the creation of new norms can be effected by acting upon empirical expectations—our belief(s) of what should be done in a given situation— and normative expectations—our belief(s) of others' beliefs of what should be done in a given situation and, then, by introducing mechanisms—discussion and deliberation— that will bridge expectations and behaviour.

In Chap. 4, we move on from interventionist accounts, but keeping in line with communication, Chris Goldspink presents an emergentist viewpoint norms from the perspective of an enactive approach to cognition. The chapter reviews extensive literature making some fundamental criticisms to accounts that only address the micro- or macro-level of explanation. Instead, it develops a level-based account of emergence which considers the defining features of human social agents –"critical cognitive capabilities" such as: affect and emotion, agency, consciousness, self-awareness, identity, cultural tools and language–significant to normative behaviour. Finally, the enactive approach to cognition–enactment of structural coupling among unities which are self-aware and linguistically capable in the environment they enter–lays out the role of these human cognitive capabilities and the ways in which they interact.

Corinna Elsenbroich (Chap. 5) introduces the notion of "we-intentionality" or "shared intentionality" to the study of normative behaviour. In particular, the

chapter criticises sociology for adapting the prism of individualism and argues that the unique feature of humans which brings about this unique social world is "we-intentionality"–that human beings do not only behave following their own intentions but are unique in joining intentions with others. Thus, assuming the ability to share intentions enables modelling complex forms of normative behaviour, such as institutions and culture as well as the dynamics of normative systems. The author discusses ways in which we-intentionality might be operationalised in agent-based models of normative behaviour.

In Chap. 6 Christine Horne bases the relational foundation of norms on dependence. The chapter focuses on social relationships as the key factor in explaining norm enforcement and, in particular, on (inter)dependence amongst group members—the extent to which one values their relationship with others as well as the goods that he or she can get from that relationship. Thus, following norms and sanctioning non-followers ("deviants") depends on whether group members are dependent on one another and value their relationship(s) and on the extent of this dependence. The author offers evidence from a series of laboratory experiments which support these theoretical claims.

Part II: *Methods and Epistemological Implications of Social Norm Complexity* includes three chapters which are centred more around methodological considerations (e.g. Agent-based Modelling).

Here, Brigitte Burgemeestre, Joris Hulstijn and Yao-Hua Tan (Chap. 7) make a case for norm change and emergence focusing on the concept of "open norms" used in regulatory compliance and exploring it through a specific case study—that of the regulations concerning kilometre registration for lease car drivers in the Netherlands. Open norms refer to norms which leave room for contextual interpretation about how they should be implemented, thus leading to (some kind of) norm emergence. The authors compare their findings to relevant literature from the multi-agent systems (MAS) field and suggest ways to extend MAS research on norm emergence.

In Chap. 8, Giulia Andrighetto, Daniel Villatoro and Rosaria Conte focus on norm dynamics and cognition viewing social norms as guides of conduct transmitted from one agent to another through normative requests or evaluations. The authors present a multilevel model to show the mental path followed by a norm in regulating human behaviour and to specify the cognitive "ingredients" and processes necessary for a normative request to be complied with.

Finally, Marco A. Janssen and Elinor Ostrom (Chap. 9) explore the consequences of visibility on behaviour—in other words what happens to norm following in the situation of having incomplete information about the collective action in which these norms make sense. The authors explore this by developing an agent-based model that describes a population of agents who share a common-pool resource, have a norm regarding when to harvest from the resource and varying levels of visibility of others' actions. Their results suggest that transparency and complete information are necessary in order to maintain norms that enhance sustainable use of commons.

The book ends with *Part III*: *Evaluating Complex Approaches to Norms*, which consists of two chapters reviewing and reflecting up the approaches in Parts I & II, commenting upon them and providing a synthetic critique.

In the first chapter, Flaminio Squazzoni (Chap. 10) focuses on two main aspects in the contributions of the volume: social context and cognition. He emphasises the need to operationalise social context in specific terms, by considering, in particular, the ways in which social structure influences behaviour. Second, he discusses how both purely cognitive models per se and the use of experiments and simulation only are insufficient in understanding the social norms puzzle.

In the second, Bruce Edmonds (Chap. 11) identifies three difficulties of understanding social norms due to their nature. These are that: norms simultaneously involve many levels (e.g. cognitive and social); are dynamic, continuously emerging, changing and falling into disuse and are highly context-dependent with different norms pertaining to different situations, identities and social groupings. The consequences of these three difficulties are discussed in turn, drawing out how the different chapters in this volume recognise and deal with them. Some tentative conclusions as to some ways forward for the study of norm-constrained behaviour are suggested.

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Part I
The Complex Roots of Social Norms

Chapter 2
Misperception Is Reality: The "Reign of Error" About Peer Risk Behaviour Norms Among Youth and Young Adults

H. Wesley Perkins

Introduction

Social norms were viewed as the cultural and structural underpinnings of human behaviour and organization and were a key focus in the founding of the discipline of sociology as exemplified in the classic theory and research of Emile Durkheim. In addition to the study of how widely held beliefs and widely practised behaviours ground individual actions and provide people with a sense of meaning and purpose, over half a century of voluminous empirical studies in social psychology point to the power of group norms in influencing individual action. These experiments date all the way back to the classic experiments of Solomon Asch (1951, 1952, 1956) and Musafer Sherif (1936, 1972). Numerous topics remain for contemporary study, however, regarding the complexity of how social norms are constructed (or emerge and evolve) and how they exert control over individuals' behaviour.

In this chapter I focus on a particular theoretical and empirical issue that has emerged in recent decades, that being the extent to which group norms might be misperceived by group members and the implications of this perceptual "error" for personal actions that are presumed to be influenced by norms. On the one hand, actual group standards may exist that control or influence individual behaviour as a contextual effect, regardless of one's consciousness of a particular norm. On the other hand, people may behave in accordance with what they perceive to be peer group standards and also attempt to influence the behaviour of others to act in line with their normative perceptions, irrespective of the accuracy of these perceptions.

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Furthermore, I specifically focus this theoretical discussion and literature review of misperceived norms on one broad topic area of applied research, that being norms regarding risk behaviours among youth and young adults. The rationale for concentrating on this area of research in my examination is straightforward. Although a few studies regarding other topics have appeared on occasion examining misperceived norms, one of the earliest empirical investigations was focused on youth risk behaviour (student alcohol abuse) and it simultaneously suggested an approach for applying the model to address this widely acknowledged social problem (Perkins & Berkowitz, 1986). From that initial study to the present, by far the largest body of empirical studies on misperceived norms has been devoted to research on youth and young adult risk behaviours. This area of research now provides enough collective studies to be able to generalize about misperceived norms in this area and the conclusions drawn have direct implications for promoting health and well-being.

I initially review the social science research empirically demonstrating substantial discrepancies in actual and perceived norms concerning risk behaviour. I then consider research on the empirical correlation of perceived norms with personal behaviour as well as research on that association independent of and in comparison to the association between actual norms and personal behaviour across populations. Finally, I review theory and research literature examining what produces these misperceptions, whether misperceptions can be altered or corrected by revealing accurate peer norms within the social group, and whether any change achieved in perceived norms produces subsequent change in individual behaviour.

This chapter focuses on this set of questions as one way in which norms may be "dynamic." That is, actual youth and young adult norms regarding healthy and risky behaviours may be more or less influential upon individuals depending on how these norms are filtered through the individuals' perceptual assessments and interpretations of peer norms. If perceived norms are a salient aspect of normative influence, to the extent that perceptions of norms can be changed, the outcome of such change in perceptions may be a concomitant shift in personal attitudes and behaviours.

At the outset of any discussion on social norms one must acknowledge that the search for a specific definition of social norms has not produced consensus (Horne, 2001). Various definitions concentrate on sanctions, values ("oughtness"), or behavioural regularities (Hechter & Opp, 2001). Some social scientists restrict the definition to social expectations that are clearly backed by rewards and consequences to assure widespread compliance while others focus on particular attitudes or beliefs that implicitly, if not explicitly, convey beliefs about morally acceptable behaviour. Other theorists and researchers focus on the instrumentality of social norms and point to shared practices and beliefs that function to bind people together in solidarity and provide a unified identity for the group. Still others adopt a broad empirical approach by examining the most common or majority attitudes in a group (injunctive norms) and the most common or majority behaviours in a group (descriptive norms) (Cialdini, Reno, & Kallgren, 1990) and how they impact individual attitudes and behaviours as well as group functioning. Recognizing that definitional matters can be important but also that resolution of the differences in definition is not likely

or essential for the discussion that follows, the latter broad definitional approach—simply identifying norms as the dominant attitudes (injunctive norms) and practices (descriptive norms) of a group—is adopted here.

Actual Norms and Perceived Norms

Few social scientists would disagree with the claim that conformity to peer group norms is a widespread phenomenon and that peer influence, in addition to personal attitudes, is a powerful determinant of personal actions in many group contexts as individuals look to others in their midst to help define the situation and give guidance on expected behaviours. Indeed, although many people frequently think of themselves as individuals in their actions, a considerable degree of peer influence is consistently documented in laboratory experiments, social surveys, and observations of crowd behaviour. In studies on antecedents of personal health-related behaviours, for example, extensive evidence has supported the theory of reasoned action (Ajzen & Fishbein, 1980) and its extension, the theory of planned behaviour, which posits norms as a determinant of personal behaviour along with personal attitudes and perceived behavioural control (Ajzen, 2001, 2002; Ajzen & Madden, 1986).

Most research exploring the potential influence of social norms on personal behaviour has failed to distinguish, however, between the potential influence of actual group norms and the perception of norms. The research literature on normative influence prior to the mid-1980s provides many studies that (1) examine the effects of variation in aggregate group characteristics on individual attitudes and behaviours but do not consider perceived norms, or (2) use subjective assessments of peer norms as a proxy for actual norms when predicting the effect of norms on personal behaviour without directly considering the accuracy of these subjective reports of peer norms. Systematic examination about the question of accuracy of perceived peer norms and the subsequent empirical question about the simultaneous relative influence of both actual and perceived norms has emerged only in the last few decades (Perkins, 2003a). Here, one finds the most detailed theoretical explications and reviews of the most extensive empirical research (Berkowitz, 2005; Borsari & Carey, 2001; Carey, Borsari, Carey, & Maisto, 2006; Perkins, 1997, 2002, 2003b) concentrating primarily on alcohol and substance abuse among adolescents and young adults.

The Pervasiveness of Misperceived Peer Norms

The first study to bring concentrated attention to misperceived norms by examining the possible systematic discrepancy between actual peer norms (as reflected in the aggregate of reported personal attitudes and behaviours) and perceived norms was

focused on high-risk drinking among university students at one small institution of higher education in the USA (Perkins & Berkowitz, 1986). Large discrepancies were uncovered in that study between what was most typical of students' attitudes and behaviours and what was perceived to be most typical. Most students misperceived the norm by substantially overestimating the permissiveness of peer drinking attitudes and the extent of alcohol consumption. Students did so even though actual drinking norms were relatively heavier than what is found in many collegiate settings, due to the school's socio-demographic characteristics and regional setting. As part of the survey, students were given a range of five possible responses to indicate their attitudes toward alcohol use from the most conservative (drinking is never good) to the most permissive (frequent intoxication is acceptable and even if it interferes with other responsibilities). About 14 % held a relatively conservative personal attitude, about 66 % took a moderate position, and about 19 % were relatively permissive believing that frequent intoxication or intoxication that occasionally interfered with academics and other responsibilities was acceptable (only 1 % did not respond to the question). Thus, the vast majority of responses—and hence the norm for personal attitudes—was shown to be moderate. But when asked to give their impression of the general campus norm in the same survey, students painted a very different picture. Using identical response categories, virtually no one perceived the general norm to be conservative, only about one-third perceived it as moderate (the actual norm), and almost two thirds (63 %) saw their peers on campus as having a very permissive attitude toward drinking. Thus, while four-fifths of students believed that one should never drink to intoxication or that intoxication was acceptable only in limited circumstances, almost two-thirds thought their peers most typically believed frequent intoxication or intoxication that did interfere with academics and other responsibilities was acceptable.

This gross misperception of drinking norms was not simply the result of a particular historical situation momentarily distorting students' perceptions. Research conducted at multiple time points several years later at the same institution demonstrated the same pattern of drinking norm misperceptions (Perkins, 1994). Moreover, following the initial study, a similar pattern of dramatic misperceptions about peer drinking norms was subsequently found to exist in studies of a variety of other individual colleges and universities in the USA. For example, students at a New England state university (Burrell, 1990) perceived their friends as heavier drinkers than themselves, and among students attending a large university in the Northwest (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991), misperceptions of peer drinking norms were found to persist across gender and housing types. Page, Scanlan, and Gilbert (1999) also found that both males and females overestimated the extent of heavy drinking among peers of the same and opposite gender at a school in the Northwest. In survey investigations using multiple strategies, Prentice and Miller (1993) found misperceptions of peers' attitudinal norms about drinking among students at a prestigious east coast private university. Misperceptions of frequent or heavy episodic drinking were uncovered in a midsized Midwestern state university (Haines & Spear, 1996), a large state university in the Southwestern USA (Johannessen & Glider, 2003) and a midsized public university in the Mid-Atlantic

East coast region (Jeffrey, Negro, Miller, & Frisone, 2003). Research on specific behaviours such as preparty drinking and drinking game participation has also revealed substantial overestimates of the peer norm (Pedersen & LaBrie, 2008).

Although most research on misperceived norms has focused on student drinking, the phenomenon is not uniquely characteristic to the consumption of alcohol, but extends to other risk behaviours. For example, Hancock and Henry (2003) found that while the past month prevalence of smoking tobacco was between 30 and 40 % for two large public universities in the southeastern USA, students on average estimated the prevalence among peers to be 54 and 57 % at these schools. Although abstinence from marijuana use was the norm for three northwestern colleges, Kilmer et al. (2006) found that students grossly misperceived the norm with 98 % believing that the students in general used marijuana at least once per year if not more frequently. LaBrie, Hummer, Lac, and Lee (2010) have similarly reported that students misperceive injunctive (attitudinal) peer norms about marijuana. Another study conducted at one large university found 70 % of students overestimating peer use of non-medical prescription stimulants and prescription opioids (McCabe, 2008).

In a nationwide study of over 45,000 students attending 100 colleges and universities in the USA, Perkins, Meilman, Leichliter, Cashin, and Presley (1999) found a consistent difference between the self-reported frequency of drinking and students' perceptions of the frequency of peer alcohol consumption in campus contexts where abstinence or infrequent use were the median of self-reports and also where the median of self-reports revealed more frequent actual use. Furthermore, students in this study substantially overestimated the frequency of peer use of tobacco, marijuana, cocaine, amphetamines, sedatives, hallucinogens, opiates, inhalants, designer drugs, and steroids. A subsequent nationwide study of over 72,000 students attending 130 schools across the USA (Perkins, Haines, & Rice, 2005), likewise, found a consistent pattern of misperceptions among students across all types of institutions when examining the quantity of alcohol consumed, regardless of variation in the actual norm across schools. Although actual norms for the number of alcoholic drinks consumed at parties and social occasions ranged from abstinence for a few schools to a high of seven drinks in one institutional setting (with norms ranging from two to five drinks in most school settings), the majority of students attending schools with each level of actual consumption substantially overestimated the consumption of local peers.

When this consistent evidence of dramatic misperception is presented, a question often arises concerning the possibility that individuals may be simply underreporting their own behaviour rather than misperceiving the norms of peers. Several arguments counter this possibility, however. First, the survey evidence reported here is almost all gathered in anonymous surveys, thus reducing presumed pressure to hide personal behaviour. Second, large gaps between actual norms based on self-report and perceived norms are found in circumstances where the behaviour is legal (e.g. tobacco use and alcohol use in young adult populations) in addition to research on illegal behaviour. Third, these large misperception gaps with actual norms are also found based on questions about personal attitudes and perceived attitudes of others which dismisses the notion that the gap could simply result from a bias in