CHAPTER 1

UNWANTED INTRUSIVE THOUGHTS IN NONCLINICAL INDIVIDUALS

Implications for Clinical Disorders

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The flow of human thought does not always follow a purposeful, task-oriented, reasoned, or intended path. Instead the natural world of human thought is frequently punctuated with unwanted cognitive activity that interferes with our ability to engage in productive thought and performance (Sarason, Pierce, & Sarason, 1996). Worry, distractions, attentional biases, memory lapses, mindwandering, daydreaming, self-focus, ruminations, and obsessive thought are examples of mental processes that create cognitive interference (Klinger, 1996). These unwanted mental intrusions can interfere in task performance as well as intellectual pursuits and social behavior, and they play a significant role in a number of psychopathological conditions (Sarason et al., 1996).

This volume focuses on a particular type of cognitive interference that is clearly present in a number of psychological disorders. Our subject matter is the unwanted intrusive thoughts, images, or impulses that are primarily self-oriented and emotionally charged and interrupt the

flow of thought. They frequently grab attention and may impel one toward some response that is intended to regulate or control the mental intrusion and its associated distress. Thus the occurrence of unwanted intrusive thoughts, their functional role in maladaptive behavioral and emotional states, and deliberate attempts at regulating these thoughts are important topics addressed by the chapter contributors.

In this chapter we examine the nature of clinically relevant unwanted intrusive thoughts, images and impulses in nonclinical samples. After three decades of empirical research, it is abundantly clear that nonclinical individuals experience unwanted mental intrusions that are similar in form and content to the cognitive intrusions that are so problematic in clinical states (for reviews, see Clark, 2004; Papageorgiou & Wells, 2004; Pope & Singer, 1978; Rachman & Hodgson, 1980; Sarason et al., 1996; Wegner & Pennebaker, 1993). The occurrence of clinically relevant cognitive intrusions in nonclinical individuals is clearly illustrated in the following example of an obsession-relevant intrusive impulse recently experienced by one of us (DAC).

It is customary for me to begin the day with an early morning run with a group of fellow runners. Our run takes place in the early morning hours before sunrise and the route involves crossing a couple of bridges over a river that divides our city. On this particular dark, cold late-autumn Canadian morning, I crossed a very busy, two-lane highway bridge with a narrow sidewalk and low guardrails. Suddenly and unexpectedly I felt an intense urge to leap over the bridge railing and imagined myself plunging head first into the frigid water far below. The impulse was so intense that my knees actually felt weak. I mentioned the experience to my co-runner, a sergeant in the Canadian army, who expressed complete bewilderment about my internal mental state.

Upon reflection I was able to identify a number of characteristics of this unwanted intrusive impulse that are typical of this type of cognitive interference. First, the impulse was unwanted and entirely discordant with my current flow of thought and mood. Prior to stepping onto the bridge, I was having a particularly good run and an enjoyable conversation. Second, the impulse was externally cued by the unusually low guardrail and narrow sidewalk. As soon as I left the bridge, the impulse left and did not return despite later running across a second bridge but with a much higher guardrail. Finally, the more I attended to the intrusive impulse, the more intense the sensation. By thinking intently on whether I really could "lose control" and act on the impulse, I was able

to intensify the experience but only as long as I was physically on the bridge.

If unwanted intrusive thoughts, images, and impulses are a universal experience, why do some people become so distressed by these cognitive intrusions? How common are unwanted intrusive thoughts in nonclinical persons? What are the similarities and differences between the unwanted mental intrusions in clinical disorders and the same unwelcomed intrusions found in nonclinical samples? How do sudden and unwanted intrusive thoughts differ from other types of cognitive interference such as worry, ruminations, and negative automatic thoughts? What are the origin and function of unwanted cognitive intrusions in the nonclinical state? These are a few of the questions addressed in this chapter. We begin by offering a definition of the phenomena of interest: unwanted intrusive thoughts, images, and impulses.

UNWANTED INTRUSIVE THOUGHTS: DEFINITIONS, INCIDENCE, AND CONSEQUENCE

Definitions

The human mind is a rich tapestry of constantly shifting thoughts, images, feelings, sensations, and impulses. Based on his thought-sampling studies with university students, Klinger (1978, 1996) determined that the median duration for specific thought content was 5 seconds, which means that individuals may experience approximately 4,000 distinct thoughts in a 16-hour day. It is reasonable to expect that some proportion of these thoughts will be unwanted mental intrusions that disrupt current on-task performance and attention. We are reminded of the complexity of the human psyche by the number of different types of cognitive events that psychologists have identified as part of the flow of thought, that is, what William James (1890/1950) referred to as the continuous, but ever-changing personal consciousness, or "stream of thought, of consciousness or of subjective life" (p. 239). As a result of this cognitive diversity, it is important to clearly define one's subject matter. This is also necessitated by the fact that the unwanted intrusive thoughts involved in clinical disorders cannot be restricted to any particular theme, or content. As evident in subsequent chapters, clinically relevant intrusive thoughts can encompass any topic, theme or content that is pertinent to the individual or situation at hand. Our definitions of unwanted intrusive thoughts, then, must specify the process characteris-

tics, dimensions, or properties that enable clear identification of this cognitive phenomena and its differentiation from other types of clinical cognition (Clark & Purdon, 1995; Klinger, 1978; Parkinson & Rachman, 1981a).

For the purposes of this chapter, we define unwanted clinically relevant intrusive thoughts, images or impulses as

> *any distinct, identifiable cognitive event that is unwanted, unintended, and recurrent. It interrupts the flow of thought, interferes in task performance, is associated with negative affect, and is difficult to control.*

This definition is consistent with conceptualizations offered by other researchers interested in this phenomenon. Rachman (1981), for example, defined unwanted intrusive thoughts "as repetitive thoughts, images or impulses that are unacceptable and/or unwanted . . . are accompanied by subjective discomfort" (p. 89). According to Rachman, the necessary and sufficient conditions for a thought to be considered intrusive are that it interrupts an ongoing activity, is attributed to an internal origin, and is difficult to control.

The cognitive phenomena we labeled *clinically relevant unwanted intrusive thoughts* would also be consistent with Klinger's (1978, 1978–1979, 1996) description of a type of thought that is respondent (i.e., spontaneous, unintended thoughts that occur in response to a cue), undirected, and frequently stimulus independent. These thoughts interrupt ongoing activity and may, on occasion, involve content that the individual considers quite usual or strange. Singer (1998) noted that respondent processes include daydreams, fantasies, and nighttime dreams.

Horowitz (1975), in his research on cognitive and affective responses to traumatic stress, defined intrusive thoughts as "any thought that implies nonvolitional entry into awareness, requires suppressive effort or is hard to dispel, occurs perseveratively, or is experienced as something to be avoided" (p. 1458). Although these definitions are fairly precise, some researchers have assumed a broader definition of the phenomena, defining intrusive thoughts as any conscious thought that is internally generated and that distracts (interferes) from on-task activity (Yee & Vaughan, 1996).

Table 1.1 lists the key properties of unwanted intrusive thoughts that are based on our previous definition of the phenomena. The unwanted mental intrusions that are the focus of this inquiry are subjectively experienced as distinct or separate, identifiable thoughts, images,

TABLE 1.1. The Primary Properties or Dimensions of Clinically Relevant Unwanted Intrusive Thoughts, Images, or Impulses

- A distinct thought, image, or impulse that enters conscious awareness
- Attributed to an internal origin
- Considered unacceptable or unwanted
- Interferes in ongoing cognitive and/or behavioral activity
- Is unintended and nonvolitional or has willful independence
- Tends to be recurrent or repetitive
- Easily captures attentional resources; is highly distractible
- Is associated with negative affect (e.g, anxiety, dysphoria, and guilt)
- Difficult to control (dispel)

or impulses that quite suddenly enter conscious awareness. Thus our subject matter concerns conscious thought that is amenable to self-report. Unwanted intrusive thoughts, then, are not chains of mentation or more general patterns of sustained thought but rather discrete "cognitive bytes." Because any thought, image, or impulse could be experienced as a mental intrusion, it is important to consider both the properties or process characteristics of the thought as well as its content when identifying unwanted intrusive thoughts for particular clinical disorders (Clark & Purdon, 1995).

Beck's content-specificity hypothesis (Beck, 1967, 1987; Clark & Beck, 1999), which states that psychological disorders are characterized by a distinct cognitive content, might be helpful in distinguishing the type of unwanted intrusive thought content associated with different emotional states. The unwanted intrusions evident in depressive states would primarily involve thoughts of personal loss or failure, the mental intrusions relevant in anxiety would deal with threat and vulnerability, and the unwanted cognitions related to anger would involve themes of personal injustice and unfairness. As discussed later, researchers have been particularly interested in the role of unwanted intrusive thoughts in obsessive–compulsive disorder (OCD), where the theme involves ego-dystonic concerns (i.e., content that is inconsistent or contrary to a person's sense of self or identity). When investigating unwanted intrusive thoughts, then, it is important to take into consideration whether one is dealing with, for example, depressive, anxious, obsessive, intrusive cognitions.

The person experiencing an unwanted intrusive thought readily acknowledges that the phenomenon is his or her own thought; that is, it

has an internal origin. Although this internal attribution would be applicable to all nonpsychotic intrusive thinking, Morrison (Chapter 7, this volume) makes a convincing argument that in psychotic states unwanted intrusive thoughts occur in which the person attributes his or her thoughts to an external source. Whether attributed to an internal or external source, we agree with Rachman (1981) that a critical feature of these mental intrusions is that the individual perceives them as unwanted or unacceptable in order to distinguish this phenomenon from a host of welcomed cognitive intrusions such as inspiration, pleasant daydreams, or fantasy.

One of the most important characteristics of unwanted intrusive thoughts is that they interfere in ongoing task performance (Sarason et al., 1996). Because of this interference, task-irrelevant intrusions have been most often studied within the context of test anxiety and, more recently athletic performance and social interaction (Pierce, Henderson, Yost, & Loffredo, 1996). Not only will unwanted intrusive thoughts interfere in current behavioral performance, but we can expect the intrusions to break into the flow of thought, thereby diverting attention away from some existing cognitive activity. One of the problems with unwanted intrusive thoughts is their capacity to interrupt concentration and impede cognitive and behavioral performance. As noted in Table 1.1, unwanted mentation is not easily ignored when it breaks into conscious awareness. Yee and Vaughan (1996) emphasized that cognitive interference must be understood in terms of impairment in the functioning of attention with interference indicated by the degree to which individuals are distracted from task performance by the imposition of a stimulus. In this sense, unwanted intrusive thoughts, images, and impulses would be an internal stimulus that is highly distracting because it captures attentional resources. Experimental research on control of unwanted intrusive thoughts indicates that individuals have a particularly hard time disattending to these mental intrusions (Edwards & Dickerson, 1987a; Sutherland, Newman, & Rachman, 1982).

Clinically relevant unwanted intrusive thoughts, images, and impulses are unintended or nonvolitional, are associated with negative affect, and are difficult to control. The nonvolitional, undirected or "spontaneous" (i.e., respondent orientation according to Klinger, 1996) quality of unwanted intrusive thoughts is the key property of this cognitive phenomenon. Klinger (1996) noted that intrusive thoughts occur without intended purpose, and Rachman (1981) speaks of the "wilful independence" of intrusive cognitions. Moreover, the unwanted intrusive thoughts relevant to clinical states also possess emotion-arousing

properties. These are not benign or fairly neutral spontaneous mentation but, rather, cognition with an "emotional bite." Based on the content-specificity hypothesis, we expect that the type of emotional response associated with the intrusion will depend on its thought content. Given these characteristics, it is not surprising that unwanted intrusive thoughts are more difficult to suppress or ignore. As a result, they often reoccur despite the person's attempt to exert increased mental control.

Incidence

As documented throughout this volume, unwanted intrusive thoughts play an important role in the psychopathology of clinical disorders (see also Sarason et al., 1996). There is increasing evidence that effective treatment of anxiety, depression, insomnia, and other conditions will require clinicians to target relevant distressing intrusive cognitions and the patient's reaction to these thoughts. On the other hand, what evidence do we have that nonclinical individuals experience the same type of unwanted mental intrusions that we find in clinical disorders? If so, what are the differences between clinical and nonclinical samples? What implication does research on nonclinical samples have for our understanding of unwanted cognitive intrusions in clinical disorders?

Given the obvious relevance of unwanted intrusive thoughts for OCD, a number of studies have investigated whether nonclinical individuals experience unwanted intrusive thoughts, images, or impulses that have a similar content to clinical obsessions. Rachman and de Silva (1978) were the first to report that obsessions do occur in nonclinical individuals. They found that 84% of their nonclinical sample reported unwanted intrusive thoughts, images, or impulses that involved content very similar to clinical obsessions (repugnant themes of dirt, contamination, accidents, injury, aggression, blasphemy, sex, etc.). Subsequent studies confirmed that 80–90% of the nonclinical population experience obsession-relevant unwanted mental intrusions (e.g., Freeston, Ladouceur, Thibodeau, & Gagnon, 1991; Niler & Beck, 1989; Parkinson & Rachman, 1981a; Purdon & Clark, 1993; Rachman & de Silva, 1978; Salkovskis & Harrison, 1984). Evidence that most nonclinical individuals have occasional obsessive-like unwanted intrusive thoughts has played an important role in the development of new cognitive-behavioral formulations for OCD (Clark, 2004; Rachman, 1997, 1998, 2003; Salkovskis, 1985, 1989, 1999).

Klinger (1978–1979; Klinger & Cox, 1987–1988) conducted two thought-sampling studies in which students recorded their immediate

thoughts whenever a timing device they carried with them throughout the day emitted a tone. In addition, participants rated each thought occurrence on 23 different dimensions. In the first study (Klinger, 1978–1979), 12 students produced 285 thought samples over a 24-day sampling period, whereas in the second study (Klinger 1987–1988), 29 undergraduates produced 1,425 thought samples over a 7-day period. Given that Klinger's concept of respondent thoughts is most closely related to our definition of unwanted intrusive thoughts, it is interesting that in the first study 27% of thoughts outside the laboratory were respondent, whereas in the second study 31% of the thoughts were rated as mainly or entirely undirected. Moreover, Klinger (1978–1979) found that 22% of the thoughts were rated by participants as very or somewhat strange or distorted, and later Klinger and Cox (1987–1988) found that 13% of the thoughts were self-rated as " 'out of character,' in gross disregard of others' expectations, or downright shocking" (p. 124). These unwanted intrusive thoughts sound very similar to the obsession-relevant cognitions that Rachman and colleagues identified in nonclinical samples. Klinger (1999) quotes from a thought-sampling dissertation study by Kroll-Mensing in which 33% of thought samples were nondirected and 18% were experienced as unacceptable and uncomfortable.

Although the presence of "normal" obsessions is clearly evident in the thought flow of nonclinical individuals, it is important not to overstate the frequency of this type of cognition in the general population. When assessment of unwanted intrusive thoughts was restricted to obsessional content (e.g., unwanted injury or violence against others, unacceptable sexual acts, dirt, or contamination), nonclinical individuals indicated that even their most common unwanted intrusion only occurred a few times a year (Purdon & Clark, 1994a, 1994b). This low frequency of ego-dystonic intrusive thoughts was replicated in a Korean student sample (Lee & Kwon, 2003). Furthermore, we recently conducted a structured interview on mental control with 100 university students (Wang, Clark, & Purdon, 2003). When asked to report two unwanted thoughts that they found difficult to control in the past week, the most frequently cited thoughts involved ego-syntonic anxious (i.e., worry-relevent) content, followed by thoughts with an obsessive content, then depressive-like thoughts, and finally angry cognitions. Moreover, students reported that these worry-related unwanted intrusive thoughts occurred several times a week but were quite successfully controlled with a moderate degree of effort.

There is other research supporting the view that the unwanted intrusive thoughts of nonclinical individuals are more likely to reflect ego-syntonic worry-related concerns than obsession-relevant ego-dystonic

issues. For example, unwanted intrusive thoughts of insecurity, self-doubt, and failure have been shown to be a frequent and important factor in the heightened anxiety that many individuals experience in evaluative settings (i.e., test anxiety; Sarason et al., 1996). Horowitz (1975) has shown that individuals drawn from the general population experience a significant increase in the frequency and repetitiveness of stressful intrusive thoughts after watching distressing films involving accident and injury (see also Tata, 1989). Klinger (1977–1978; Klinger & Cox, 1987–1988) found that 96% of his participants' thoughts concerned their everyday experience, and that thoughts dealt with present life concerns 67% of the time. Likewise, students kept in a dark, sound-attenuated chamber for 24 hours reported thought content that primarily focused on real events occurring in the present and involving friends (Suedfeld, Ballard, Baker-Brown, & Borrie, 1985–1986).

Brewin, Christodoulides, and Hutchinson (1996) also found that nonclinical individuals reported a fairly high frequency of negative intrusive thoughts and memories over a 2-week period. However, in an earlier study by Clark and de Silva (1985), students estimated that negative depressive and anxious entered their mind fairly infrequently (i.e., between biweekly and monthly). Nevertheless, particular circumstances, life situations, or contexts may increase the frequency of unwanted intrusive thoughts. Parkinson and Rachman (1981b) reported that mothers whose children were admitted to hospital for tonsillectomy reported significantly more stress-related intrusive thoughts during a 20-minute period of listening to music than did control mothers. A high percentage of parents of newborns (65%) report that they experience unwanted intrusive thoughts of harm, injury, or illness occurring to their infant (Abramowitz, Schwartz, & Moore, 2004), and 41% of mothers with clinical depression have intrusive thoughts of harming their child (Jennings, Ross, Popper, & Elmore, 1999).

At this point a number of conclusions can be drawn about the clinically relevant unwanted intrusive thoughts in nonclinical individuals. Most nonclinical individuals experience unwanted intrusive thoughts, images, or impulses. A variety of thought content can take the form of an unwanted mental intrusion, including more bizarre ego-dystonic obsession-relevant intrusions. However ego-syntonic anxious or depressive thoughts are likely more common, and it is quite clear that external provocation, such as a stressful stimulus or life circumstance, can trigger a resurgence of unwanted cognitions (Horowitz, 1975; Parkinson & Rachman, 1981b). Information on the exact frequency of various types of unwanted intrusive thoughts in nonclinical populations remains unclear, and it is still not known whether some individuals are more vulner-

able to the experience of unwanted cognitive intrusions than other individuals.

Correlates of Unwanted Intrusive Thoughts

A fairly consistent picture is emerging from research on the experience of obsessive, anxious, or depressive unwanted intrusive thoughts in nonclinical samples. The more frequent the unwanted intrusion, the more emotionally arousing or distressing the thought. Frequent and emotionally distressing intrusions are more difficult to control and are more likely to be associated with a negative mood state (Clark & de Silva, 1985; Freeston, Ladouceur, Thibodeau, & Gagnon,1992; Niler & Beck, 1989; Parkinson & Rachman, 1981a; Purdon & Clark, 1994a; Reynolds & Salkovskis, 1991; Salkovskis & Harrison, 1984). Reynolds and Salkovskis (1992) demonstrated a reciprocal relationship between mood and frequency of negative intrusive thoughts. In an initial experimental session, more frequent negative intrusions were associated with a deterioration in mood, whereas in a subsequent experimental session induction of a sad mood led to an increase in negative intrusions and a reduction in positive thoughts. Klinger (1978–1979) reported that participants rated respondent (i.e., intrusive, undirected, spontaneous, and nonvolitional) thoughts as less controllable than operant (more volition, purposeful goal-directed) thoughts.

Faulty Appraisals

There is also evidence that the meaning, significance, or importance attached to the unwanted intrusive thought can have a major impact on its frequency and controllability. Freeston et al. (1991), for example, found that unwanted intrusive thoughts that participants rated as highly disapproving were also considered the most difficult to control. In our own studies on unwanted intrusions in nonclinical individuals, concern that one might act on the intrusive thought was related to greater perceived difficulty controlling the unwanted thought (Clark, Purdon, & Byers, 2000; Purdon & Clark, 1994a, 1994b). In a more recent study, maladaptive beliefs that negative consequences are more likely if intrusive thoughts are not controlled were associated with increased frequency of unwanted intrusions (Clark, Purdon, & Wang, 2003). Lee and Kwon (2003) found that autogenous intrusive thoughts (i.e., ego-dystonic intrusions without an identifiable external trigger) were more difficult to control and tended to be appraised as more unacceptable, immoral, personally significant, and important to control. As well, a number of stud-

ies found a positive relationship between questionnaire and rating scale measures of the occurrence and perceived uncontrollability of unwanted negative intrusive or obsessional thoughts on the one hand and higher perceived responsibility for the thought and its anticipated consequences on the other hand (Forrester, Wilson & Salkovskis, 2002; Salkovskis et al., 2000; Wilson & Chambless, 1999; for contrary results, see Foa, Amir, Bogert, Molnar, & Przeworski, 2001).

Attention and Control

There is also evidence that heightened attentiveness to unwanted intrusions and increased effort to control these thoughts may actually result in greater difficulty with the unwanted cognitions. Evidence from a study by Janeck, Calameri, Riemann, and Heffelfinger (2003) indicates that a tendency to be especially attentive toward one's thoughts (i.e., cognitive self-consciousness) may be a factor in negative appraisal of unwanted intrusive thoughts, especially for individuals with OCD. In a thought suppression experiment, Purdon and Clark (2001) found that intentional suppression of obsession-relevant intrusive thoughts heightened the discomfort and unacceptability of the intrusions, with more frequent target thought intrusions associated with a more negative mood state. In a subsequent thought suppression study, Purdon (2001) found that the greater the number of unwanted thoughts during a suppression period, the greater the suppression effort. In an interview study, students who rated themselves as having less control over their unwanted intrusive thoughts were more likely to blame themselves for not trying hard enough to control the thought (Wang et al., 2003). It is apparent from these studies that greater attention and effort to control unwanted thoughts have a negative impact on individuals' experience of the cognition.

We can now construct a profile of unwanted intrusive thoughts in nonclinical individuals. Greater attention and effort to control unwanted thoughts, as well as a tendency to misconstrue these thoughts as highly significant because of anticipated negative consequences or threat to self or others, may actually lead to greater difficulty with the very thoughts one desires to avoid. If this process continues, one could envision the development of a significant clinical problem with unwanted intrusive thoughts.

Clinical versus Nonclinical

In support of this formulation, it is now clear that the primary difference between the unwanted intrusive thoughts in clinical and nonclinical samples is one of degree rather than kind. Studies that have directly

compared the characteristics, responses, and appraisals of unwanted intrusive thoughts in clinical and nonclinical individuals generally find quantitative rather than qualitative between-group differences. For example, research comparing the obsession-relevant intrusions of nonclinical individuals with the obsessions of OCD patients found that the primary difference between the two groups is that individuals with OCD experience more frequent, distressing, uncontrollable, and unacceptable intrusions and perceive these thoughts to be less controllable (Calamari & Janeck, 1997; Janeck & Calamari, 1999; Rachman & de Silva, 1978). In addition, OCD patients more strongly resist their obsessions than do nonclinical comparison groups, are more likely to engage in neutralization, have a greater tendency to use maladaptive thought control strategies, and perceive these control efforts to be less successful (Amir, Cashman, & Foa, 1997; Ladouceur et al., 2000).

In a recent study on ego-syntonic or worry-related negative intrusive thoughts, Ruscio and Borkovec (in press) found that both nonclinical high worriers and individuals with diagnosable generalized anxiety disorder (GAD) experienced a brief "burst" of negative intrusive thoughts during a 5-minute focused attention task after they spent 5 minutes concentrating on their primary worry. In terms of subjective ratings, the GAD and non-GAD worriers produced similar ratings on the frequency, distress, and intensity of worry-intrusive thoughts during the postworry induction focused attention task. However, differences were apparent with a higher proportion of the clinical worry group reporting negative intrusions during the postinduction attentional task than did the nonclinical worry group. In addition, the GAD worriers reported less perceived control over their worry intrusions during the experiment, and they showed a tendency to subjectively appraise the thoughts as more dangerous and uncontrollable than did the nonclinical worry group. Together these findings indicate that clinical individuals experience a higher frequency of unwanted intrusive thoughts that may be more easily cued by contextual factors, and they are more likely to appraise these thoughts in a maladaptive and uncontrollable fashion. Again, though, these differences are a matter of degree rather than kind.

UNWANTED INTRUSIVE THOUGHTS AND OTHER TYPES OF NEGATIVE COGNITION

The stream of consciousness is a busy highway clogged with a variety of thoughts, images, memories, sensations, and feelings. In the last two de-

cades, cognitive–clinical psychologists have identified a number of different types of thought form and content that appear to play an important role in the pathogenesis of clinical disorders. It is important, then, to clarify whether unwanted intrusive thoughts can be distinguished from other types of negative cognition. Is there something unique about mental intrusions that differentiate them from other types of negative cognition, or, in the end, are we merely describing the same mental phenomena from different theoretical perspectives or research traditions?

Obsessions and Unwanted Intrusive Thoughts

Much of the interest in unwanted intrusive thoughts in nonclinical samples came from research into the etiology of obsessions. Clinical obsessions, in many respects, represent the extreme clinical variant of unwanted intrusive thoughts. The conceptualization of intrusive cognition offered in this chapter could be used to characterize more severe clinical obsessions. Thus unwanted intrusive thoughts and obsessions can be placed on a severity continuum, with their distinction being one of degree rather than kind. Table 1.2 summarizes a number of dimensions along which unwanted intrusive thoughts and obsessions can be distinguished. Various cognitive appraisal models have been proposed to explain how a relatively infrequent, ego-dystonic intrusive thought can escalate in frequency and intensity to become a clinical obsession (Clark, 2004; Rachman, 1997, 1998, 2003; Salkovskis, 1985, 1989, 1999). Whether an unwanted ego-dystonic intrusive thought can be considered an obsession or an unwanted mental intrusion will depend on whether the subjective experience of the thought falls toward the more extreme end of the dimensions listed in Table 1.2.

Worry versus Unwanted Intrusive Thoughts

Worry is ubiquitous to the human experience. No doubt everyone has experienced worry at some time in their life. Moreover, worry is a central feature of anxiety states, especially GAD. Worrisome thinking can dominant human thought flow and cause considerable interference in task performance. The most widely accepted definition of worry was formulated by Borkovec, Robinson, Pruzinsky, and DePree (1983):

> Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable. The worry process represents an attempt to engage in mental problem-solving on an issue whose outcome is uncer-

TABLE 1.2. Dimensions That Distinguish Nonclinical Unwanted Intrusive Thoughts and Clinical Obsessions

Unwanted mental intrusions	Clinical obsessions
Less frequent	More frequent
Less unacceptable/distressing	More unacceptable/distressing
Little associated guilt	Significant feelings of guilt
Less resistance to the intrusion	Strong resistance to the intrusion
Some perceived control	Diminished perceived control over the obsession
Considered meaningless, irrelevant to the self	Considered highly meaningful, threatening important core values of the self (ego-dystonic)
Brief intrusions that fail to dominate conscious awareness	Time-consuming intrusions that dominate conscious awareness
Less concern with thought control	Heightened concern with thought control
Less emphasis on neutralizing distress	Strong focus on neutralizing distress associated with the obsession
Less interference in daily living	Significant interference in daily living

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> tain but contains the possibility of one or more negative outcomes. Consequently, worry relates closely to fear process. (p. 10)

There is considerable evidence that nonclinical individuals engage in worry, although not to the same frequency, intensity, and uncontrollability as patients with GAD (Craske, Rapee, Jackel, & Barlow, 1989; Dupuy, Beaudoin, Rhéaume, Ladouceur, & Dugas, 2001). Like other clinical phenomena, a recent taxometric analysis of selected worry questionnaire items suggests that worry is a dimensional rather than categorical construct (Ruscio, Borkovec & Ruscio, 2001). Based on a 2-week self-monitoring study, Dupuy et al. (2001) found that nonclinical individuals worried 55 minutes per day. Tallis, Eysenck, and Mathews (1992) reported that 50–75% of their nonclinical sample endorsed most of the worry statement items that were selected for the Worry Domains Questionnaire. The types of worry concerns expressed by nonclinical individuals include work/school (19–30%), family/home/interpersonal (26–44%), finances (13–26%), illness/health/injury (2–25%), or miscellaneous (0–15%) (Borkovec, Shadick, & Hopkins, 1991).

A number of researchers have compared worry and unwanted intrusive thoughts (for further discussion, see Wells, Chapter 5, this volume).

Unwanted intrusive thoughts and worry share certain characteristics that can make discrimination difficult. Both types of cognition easily capture attentional resources, interfere in ongoing activities, are difficult to control, and are subjectively unpleasant or distressing (Borkovec et al., 1991). However, a number of key differences have emerged from studies that compared individuals' subjective experience of worry and unwanted intrusive thoughts (Clark & Claybourn, 1997; Langlois, Freeston, & Ladouceur, 2000a, 2000b; Lee, Lee, Kim, Kwon, & Telch, 2003; Wells & Morrison, 1994). Worry predominantly takes a verbal or linguistic form and is more distressing or unpleasant, more realistic but tends to cause greater interference in functioning, is more voluntary but intrusive, is more persistent and of longer duration, and possibly is more difficult to dismiss, although the research is mixed on this last point. In addition, the faulty appraisals that characterize worry tend to focus on whether the dreaded consequences of the worry-related negative events might come true. On the other hand, unwanted intrusions consist of both thoughts and images and are less voluntary, of shorter duration, and more ego-dystonic. The faulty appraisals associated with unwanted intrusions more likely involve concerns about personal responsibility and whether the intrusion reflects negatively on one's personality. Intrusive thoughts and worry may differ less in degree of controllability, their intrusiveness, the extent to which they are resisted, and the types of control strategies used to deal with the unwanted thoughts. Contrary to expectation, there may be a greater compulsion to act on worries than unwanted ego-dysontic intrusive thoughts.

In summary, the distinguishing characteristics of clinically relevant unwanted intrusive thoughts vis-à-vis worry may be that it is experienced as a brief, nonvolitional, undirected, and stimulus-independent "mental flash" that is quite different from one's present train of thought. Worry, on the other hand, appears as a more sustained and persistent pattern of thought that is closely linked in a negative fashion to the individual's current concerns. For this reason, worry is consistently rated as a more problematic cognitive state for nonclinical individuals than are unwanted intrusive thoughts. However, evidence that brief periods of worry can lead to a subsequent increase in negative intrusive thoughts indicates a strong functional relationship exists between the two types of cognitions (Borkovec et al., 1983; York, Borkovec, Vasey, & Stern, 1987; Wells & Papageorgiou, 1995). As well, Langlois, Ladouceur, Patrick, and Freeston (2004) reported that illness intrusions share many important characteristics with other types of ego-syntonic worry. These findings remind us that unwanted mental intrusions and worry are

closely related phenomena, and together they can have a significant emotional impact on the individual.

Rumination and Unwanted Intrusions

Persistent and repetitive, or ruminative, negative thinking is another type of cognition that has been linked to adverse emotional states, especially depression. Beck (1967) observed that the moderately or severely depressed person has a tendency to brood or ruminate over negative aspects of the self or external situations. However, it was Nolen-Hoeksema's (1991) conceptualization of rumination that sparked research on its role and function in depression. She defined rumination "as repetitive and passive thinking about one's symptoms of depression and the possible causes and consequences of these symptoms" (Nolen-Hoeksema, 2004, p. 107). Borkovec, Ray, and Stober (1998) commented that depressive rumination appears to have a similar process and content to worry phenomena in GAD. Certainly repetitive thought, a cardinal feature of rumination and worry, is a significant predictor of both anxious and depressive symptoms in nonclinical samples (Segerstrom, Tsao, Alden, & Craske, 2000).

Given that depressive rumination and worry have many similarities, it is important that unwanted intrusive thoughts be distinguishable from ruminative thinking, especially given the heightened incidence of intrusions in depressed states (Brewin et al., 1996; Brewin, Reynolds, & Tata, 1999; Jennings et al., 1999). However, there are no published empirical studies that directly compared unwanted intrusions and rumination in clinical or nonclinical samples. Papageorgiou and Wells (2004) recently provided an informative discussion of the nature of depressive rumination that suggests some key differences between rumination and intrusions. They state that ruminative thinking involves chains of repetitive, recyclic, negative, and self-focused thinking that can be cued by an external event but more often is triggered by a prior thought. The focus of the rumination is often some aspect of the self or one's emotional state, or it could involve negative inferences about a stressful life event. In a series of studies that compared rumination and worry, Papageorgiou and Wells (2004) were able to flesh out a number of key characteristics of rumination such as past orientation, reduced confidence and problem-solving effort, and longer duration.

Although direct comparison studies are needed, it is likely that unwanted intrusive thoughts can be quite easily distinguished from rumination. Rumination represents a much longer train of thought that is

recurrent, repetitive, cyclical, highly ego-syntonic, past oriented, and directed. Unwanted intrusions, on the other hand, are brief, sudden, and somewhat unexpected thoughts or images, of relatively short duration, often ego-dystonic, and undirected by the individual. It may be that the repeated occurrence of a similar type of unwanted intrusive thought or image could trigger an episode of depressive rumination.

Negative Automatic Thoughts and Unwanted Intrusions

Beck (1967, 1976) first observed that clinically depressed patients experience a train of negative thought that is not reported but that runs concurrent with more conscious focused thought. Labeled *negative automatic thoughts*, these thoughts appeared to intrude rapidly and with little effort. They were highly self-focused and dealt with negative views about the self, personal world, or future. From his clinical observations, Beck deduced that negative automatic thoughts tended to (1) be very fleeting, (2) be highly specific or discrete, (3) be spontaneous, (4) be plausible to the individual, (5) be idiosyncratic to the individual's personal concerns, (6) precede emotional arousal, and (7) involve a bias or distortion of reality (see Clark & Beck, 1999).

Beck's concept of negative automatic thoughts shares a number of characteristics with unwanted intrusive thoughts, especially within the context of depressed states. In the intervening years, numerous studies using questionnaire, interview, and self-monitoring methods have demonstrated that nonclinical individuals experience negative automatic depressive and anxious thoughts, although they are less frequent, intense, and plausible (i.e., believed) than the negative automatic thoughts that characterize clinical states (for reviews, see Clark & Beck, 1999). This raises the possibility that the same cognitive phenomena could be labeled *unwanted intrusions* in one study and *negative automatic thoughts* in another study, depending on ones theoretical perspective and research tradition.

Salkovskis (1985) argued that negative automatic thoughts as defined by Beck (1976) and unwanted intrusive thoughts (or obsessions) as described by Rachman (1981) can be clearly differentiated in terms of content and process characteristics. The content of unwanted intrusions is more likely perceived as irrational and ego-dystonic, whereas negative automatic thoughts are considered more rational and ego-syntonic. In addition, unwanted intrusive thoughts, images, and impulses are more intrusive, more disruptive of ongoing activity, and more easily accessed,

whereas negative automatic thoughts tend to run parallel to conscious awareness, are harder to access, and may cause less momentary interference in task performance.

There are a number of other characteristics that may distinguish unwanted intrusive cognition from negative automatic thoughts. Because negative automatic thoughts are an inherent quality of the depressed or anxious state, they are more plausible, directed, and volitional. Though unwanted intrusive thoughts are influenced by mood state, nevertheless they show less mood contiguity and are less plausible, more nonvolitional, and more spontaneous. A much higher proportion of unwanted mental intrusions occur as images, whereas negative automatic thoughts predominantly occur in the linguistic, verbal mode. Negative automatic thoughts also tend to be longer, more elaborative chains of evaluative thoughts, whereas unwanted mental intrusions are sudden bursts of discrete, highly distracting, and attention-grabbing thoughts, images, or impulses. Until the necessary comparison studies are published, the distinction between clinically relevant unwanted intrusive thoughts and negative automatic thoughts remains based on clinical observation.

ORIGINS OF UNWANTED INTRUSIVE THOUGHTS

Given the ubiquitous nature of unwanted intrusive thoughts, images, and impulses and their significant role in many psychological disorders, why do we have these sudden, inexplicable mental intrusions? What are the origins of these unwanted intrusions given their apparent discordance with self-interests, their disrupting influence on task performance, and their minimal relevance to goal-directed pursuits? Are they an inconsequential by-product of our problem-solving capability, or an inherent part of human imagination or curiosity seeking? (L. Ford, October 22, 2003, personal communication)

Unfortunately, empirical research into unwanted intrusive thoughts has not devoted much attention to the origin and role of this cognitive phenomenon in normal functioning. Salkovskis (1988), for example, suggests that unwanted intrusive thoughts are an inherent aspect of generating ideas for problem solving. He notes that "brainstorming" is a critical element in human problem solving. To consider all possible solutions to a current concern or problem, it is important that novel ideas are generated without prior censorship in a manner that maintains attentional priority. Unwanted mental intrusions, then, are considered a

product of human problem-solving capacity where the generation and conscious awareness of ideas must occur prior to any evaluative process. Salkovskis contends that even our normally unacceptable intrusive thoughts may be useful under changed circumstances. The intrusive and compelling nature of these thoughts or ideas ensures that they are noticed and evaluated for possible relevance to current concerns, goals, and problems. Intrusive thoughts produced by an "idea generator" with little relevance to our immediate goals or concerns will not persist because of limited attentional resources. However, intrusions which are evaluated as relevant to immediate concerns will persist and attain salience regardless of their acceptability. In support of this perspective, Salkovskis cites research showing that nonclinical individuals have both positive (pleasant) and negative (unpleasant) intrusions that are experienced in a similar manner (Edwards & Dickerson, 1987b; England & Dickerson, 1988).

Although Salkovskis's view on the origins of unwanted intrusive thoughts has not been elaborated in subsequent years, it is broadly consistent with formulations proposed by Rachman (1981, 2003) and Klinger (1978, 1996). Next we consider three explanations of the etiology of unwanted mental intrusions proposed by Rachman (1981, 2003), Klinger (1978, 1996), and Horowitz (1975).

Rachman's Account

Rachman's view on the origins of unwanted intrusive thoughts primarily concerns the etiology of obsessions. Rachman (1981) commented that external cues are important in the provocation of unwanted intrusive impulses (i.e., sudden urge to jump in front of an oncoming subway train), but the role of the environmental context in triggering unwanted intrusive thoughts or images is much less clear. In fact, he noted that intrusive thoughts are often more frequent and intense during periods of solitude.

Rachman contends that setting conditions and internal origins may be more critical in the genesis of unwanted intrusive thoughts and images (Rachman, 1978, 1981, 2003; Rachman & Hodgson, 1980). Two conditions that may be particularly important in the provocation of unwanted intrusive thoughts and images are stress and a dysphoric mood state. Research reviewed by Rachman indicates that individuals have more frequent and distressing mental intrusions when exposed to stressful conditions and they have greater difficulty ignoring or suppressing unwanted thoughts during a sad mood state (see Wenzlaff, Chapter 3,

this volume). As well, Rachman (2003) raised the possibility that dysphoria may result in a greater tendency to misinterpret the significance and feared consequences of the intrusion.

Rachman (1978) suggests that certain personality characteristics, such as heightened sensitivity to threat or danger, neuroticism (high negative emotionality), conscientiousness, and timidity, may also increase sensitivity or responsiveness to unwanted intrusive thoughts and images. Individuals high in these personality traits may be more inclined to interpret their thoughts as highly significant and unacceptable events that challenge their basic values and concerns. As well, a person with heightened sensitivity to external danger or threat cues will be provoked by a wider range of stimuli. As a result, he or she will experience more unwanted distressing intrusive thoughts, images, and impulses.

In summary, Rachman suggests a number of possible precipitants of unwanted mental intrusions, including external cues, stress, dyphoric mood, and certain predisposing personality characteristics. Although Rachman's ideas are useful in understanding the provocation of unwanted intrusions, especially those with obsessive content, they do not really address the more fundamental question of the origins and function of this cognitive phenomenon in nonclinical individuals.

Klinger's Thought-Shifting Theory

The intrusion of unwanted thoughts, images, or impulses into the flow of thought can be viewed as a sudden shift in thought content. From this perspective, an explication of the variables responsible for shifts in thought content would indicate how unwanted intrusive thoughts are generated. The main tenet of Klinger's (1996) model is that "thought content shifts when an individual encounters a cue that arouses emotion because of its association with one of the individual's current concerns" (p. 4). The concept of *current concern*, then, plays a central role in understanding the frequent, rapid shifts in thought content.

Current concerns is a motivational construct that refers to "the latent state of an organism between the two time points of commitment to striving for a particular goal and either goal attainment or disengagement from that goal" (Klinger, 1996, p. 4). Current concerns are presumed to underlie various cognitive processes including the formation of thought content. Moreover, an individual's current concerns will make him or her particularly sensitive or emotionally reactive to cues associated with valued goals or the means for attaining these goals (Klinger, 1996). These concern-related cues may be external stimuli, nonverbal

events, or even other events within the stream of consciousness (Klinger, 1999). If some goal-directed response cannot be initiated by the cued concern-related thought, then the thought will remain a spontaneous, idle cognitive response. Klinger (1996) states that cues leading to shifts in thought content will be evaluated at various levels of information processing. At a central, preconscious level, gross features of a cue are evaluated and a *protoemotional response* is generated. This leads to further higher-level processing that confirms or disconfirms the cue's relevance to current concerns. If the relevance of the cue is disconfirmed, then processing ends, whereas confirmation of the cue's relevance to current concerns will lead to further processing and/or some response or action (Klinger, 1999).

There are two important qualifications about the processing of emotional cues associated with current concerns (Klinger, 1996, 1998, 1999). First, the processing of concern-related emotional cues will conflict with ongoing activity for attention and other processing resources. If attention to the emotional cue can be inhibited so that attentional resources can remain focused on the ongoing activity, then the concern-related emotional cues may be processed without entering conscious awareness. However, the concern-related emotional cues will enter consciousness if they exceed a certain threshold for interrupting the ongoing stream of thought. In other words, a certain amount of preconscious processing occurs with concern-related emotional cues. A second qualification is that cues that elicit hard-wired emotional responses or a conditioned emotional response may produce conscious thought content in the absence of a current concern, although in most instances emotional responses reflect current concerns.

Research support can be found for Klinger's view of a close relation between current concerns and greater responsive to emotional cues. In an early study involving a dichotic listening task, Klinger (1978) found that participants attended more closely to concern-related passages, recalled more words from these passages, and generated more thoughts in response to the concern-related passage than to the non-concern-related passage. Other studies have shown that individuals exhibit enhanced processing of concern-related material (for review, see Klinger, 1996). These findings suggest that the ability of intrusive thoughts to gain attentional priority might stem from their connection to the individual's current concerns.

Thus what can be concluded from this model about the origins of unwanted intrusive thoughts? First, motivation (i.e., an individual's primary goals or current concerns) will have a powerful impact on the

types of thoughts, images, or impulses that intrude into conscious awareness. Second, any internal or external cue relevant to a person's current concerns (i.e., goal pursuits) can elicit an emotional response, and this emotional response may precede extensive cognitive processing. Third, some degree of preconscious emotional and cognitive processing will occur in response to concern-related emotional cues. Thus the intrusion of an unwanted thought, image, or impulse is the result of an emotionally arousing concern-related cue that triggers a shift in thought content. To understand why an individual has certain unwanted intrusive thoughts, it is necessary to determine his or her current concerns, including any dormant or latent concerns, as well as the cues that are capable of eliciting an emotional response.

Horowitz's Formulation

Horowitz (1975) proposed a cognitive reformulation derived from the prevailing psychoanalytic explanation at that time for the repeated intrusion of thoughts and feelings following termination of a stressful event or stimulus. The account is based on three propositions about active memory: (1) active memory storage is characterized by an intrinsic tendency to repeat its represented contents, (2) this will continue until storage of contents in active memory is terminated, and (3) termination of active memory contents will occur only when cognitive processing is complete. According to Horowitz, the contents of active memory follow an automatic "completion tendency." The complete cognitive processing of stressful or traumatic events occurs with the assimilation and accommodation of information dealing with the meaning, interpretation, and implication of the event with the planning and assessment of one's coping resources.

Horowitz (1975) states that external stressful events will stimulate in active memory an internalized representation of the experience, which itself is influenced by internal factors such as the motivational state of the person, defensive and coping strategies, and the personal meaning of the event. There is a tendency for the internal representation of the event in active memory to reemerge repeatedly into consciousness when control capacity is low and concentration on external demands can not be maintained. As well, internal or external cues may trigger recollections. Thus intrusive and repetitive thoughts of the stressful event will continue until there is an integration of new and old information. Representations (memories) of the stressful event may conflict with a person's inner model of the world and thus remain in active memory until these inner

models are modified to accord with the new stressful experience (Horowitz, 2003). That is, schemas of the self, world, and others must be revised so that new memories of the traumatic or stressful event are created that adequately fit with existing memory representations. When this occurs, the stress-relevant representations in active memory are erased and, as a consequence, stress-related intrusive thoughts cease. The stressful event now becomes coded with other relevant associations in inactive memory.

Horowitz's formulation is particularly helpful in understanding unwanted cognition that is provoked by highly stressful or traumatic events. It provides less insight into the apparently irrelevant, uncharacteristic intrusive thoughts that often interrupt the normal flow of thought. Nevertheless, Horowitz reminds us that certain aspects of memory storage may be inclined toward the conscious intrusion and repetition of unwanted material. In addition, his formulation emphasizes that unwanted intrusive thoughts may represent a failure to integrate new information of external events with existing internal working models of the self and world.

CONCLUSION

In this chapter we have discussed the existence of unwanted intrusive thoughts, images, and impulses in nonclinical populations. Although three decades have passed since the first empirical studies on unwanted cognitions in nonclinical individuals, a convergence of thought on the nature, role, and function of this phenomenon in normal functioning is lacking. Theory and research on unwanted intrusive thoughts have proceeded quite separately within different research streams. The social psychologists interested in consciousness and thought flow have pursued their research agenda on thought content quite independent of the clinical research on the same phenomenon. Even within the clinical domain, there has been little cross-fertilization in research on unwanted intrusive thoughts in the context of OCD and the work on cognitive intrusions in other anxiety states such as performance evaluation or test anxiety. It is hoped that the definitional issues addressed in this chapter, the differentiation of unwanted intrusive thoughts from other types of negative cognition, and a consideration of the origins of intrusive thoughts in nonclinical states will help advance our research into this phenomena. The chapters that follow provide a more focused discussion of the processes involved in the transition from nonclinical unwanted intrusive thoughts

to the more frequent, distressing, and uncontrollable mental intrusions so prominent in a variety of clinical states.

ACKNOWLEDGMENT

Work on this chapter was supported by a grant (No. 410-2001-0084) from the Social Sciences and Humanities Research Council of Canada awarded to David A. Clark.

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