“The man who is angry at the right things, and with the right people, and, further, as he ought, when he ought, and as long as he ought, is praised.”
Aristotle (1991, p. 96)

INTRODUCTION

Anger: The focus of this thesis

Anger is a negatively toned (i.e., unpleasant) emotion and internal occurrence, which is subjectively experienced as a highly aroused, agitated, and antagonistic state of mind (Novaco, 1994, 2000). The collective term emotion represents various reaction patterns to evocative stimuli, in which multiple features of subjective/affective, cognitive, physiological/arousal, and expressive/goal oriented components are involved (Plutchik, 1984). Emotions are to be distinguished from affect states, which are relatively brief episodic occurrences, and also from mood, which is a more pervasive, sustained experience (Borod, 1999).

The emotion of anger may manifest itself in varying intensity from mild irritation to outbursts of fury and rage (Berkowitz, 1990; Kassinove & Eckhard, 1995; Spielberger, Reheiser, & Sydeman, 1995; Spielberger, Ritterband, Sydeman, Reheiser, & Unger 1995). This statement corresponds with Berkowitz and Harmon-Jones’ (2004) conclusion on the numerous nuances of anger, as well as with the argument of Shaver, Swartz, Kirson, and O’Connor (1987), that anger often involves a wide variety of feelings, labeled as irritation, annoyance, disgust, resentment, fury, and hate.

Anger is a frequently occurring emotion, the moderate to intense forms of which may be experienced several times a day by any individual (Averill, 1983), evoked by a variety of external stimuli (e.g., persons, objects, and situations) or internal sensations (e.g., anger-laden memories, feelings of rejection, humiliation, and anxiety) that are interpreted as provocative and wrongful (Novaco, 2000). Obviously, the list of provocations is both individual and culture-specific. It is also endless; people may hate situations with inoperative elevators, slow-moving supermarket lines, rude teenagers, corrupt politicians, barking dogs, or leaking faucets. By the same token, people may become incensed in the absence of a real provocation because of their mental preoccupation with, and memories of provoking phenomena.

Although some capacity for anger seems to be universally inherited, the inclination to angry reactions, as well as the intensity, duration, and personal style of its expression are highly individual. Emotions and emotional style are the building blocks of a person’s unique, relatively stable, and consistent pattern of personality, which dispose him or her to think, feel and behave in a particular way (Spielberger, Ritterband et al., 1995; Tremblay & LeMarquand, 2001). Although everyone experiences anger on occasion, some people are clearly more hot-headed than others. There are hot spurs and there are calm-cucumbers. A fiery temper may manifest itself outwardly in various forms of verbal and physical confrontations, or may be boiling for decades in a suppressed and hidden manner (Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al.).
The various theoretically assumed properties of anger may be demonstrated by the protagonist played by Michael Douglas in the film “Falling Down”. Stuck in an endless traffic jam on an extremely hot day, the main character abandons his car (with the vanity plate D-fence) on the freeway in Los Angeles. According to Kassinove and Sukhodolsky (1995) and Plutchik (1984) the subjective, internal occurrence of the emotion of anger is communicated through more or less voluntary and obvious displays of body and face. In the traffic jam, the protagonist communicates his mood vividly through flaring, dilated nostrils, frowns, postural changes, clenched fists, as he hits the steering wheel and swears. Berkowitz (1990), Berkowitz and Harmon-Jones (2004), and Zillman (1971) argue that the presence of a prior, negative affect state may intensify anger and lower the ability to control oneself. It is easier to boil over when one is unhappy, disappointed, or bothered by pain. In case of the protagonist of “Falling Down”, the situationally triggered anger is intensified by the warm temperature, foul odors, disturbing noises, and aggressive models (i.e., the crowded, hostile masses in buses and cars) that surround him. The sorrow over his prior loss of family and job may have contributed to a general mood of negative affect, and to his deteriorated decision making capacity. In the long run, the angered protagonist turns to extreme measures in the name of justice which develop into a crusade across the city, against greedy shopkeepers, gang members, inattentive service staff, and the authorities. Novaco (1986, p. 35) argues, “What appears to be an impulsive act may actually be the product of recurrent anger excessively inhibited and stemming from preoccupation.” In the case of the main character the rage that seems to be an impulsive reaction to an unbearable situation, may have been fuelled at least as much by hostile attitudes and exaggerated preoccupation with how things should be. His anger may even be regarded as understandable, considering the provocations he experiences; each and everyone may feel intense anger when experiencing neglect and humiliation as a customer in a fast food restaurant. However, not everyone attempts to get a breakfast by aiming a gun at the counter staff. Exaggerated reactions to provocations are made much easier by fast-rooted, negative apprehensions about various categories of people who are viewed as acceptable/suitable to knock around.

The Janus-faced emotion of anger

Janus is the Roman God of Beginnings (e.g., beginning of the year, January), the custodian of the universe, and the guardian of doors and gates. On ancient Roman coins, statues, and frescos, he is portrayed with two faces, looking both backwards and forwards simultaneously. Janus represents duality and continuity: a transition between primitive and civilized societies, rural and urban existences, and the dichotomy of war and peace, youth and old age. In the modern usage, the expression “Janus-faced” describes deliberate deceit and also two-faced or bipolar phenomena, and is concerned with polarities or contrasts. In the context of the present thesis, Janus has been called upon to depict the dual tradition of apprehensions, which traditionally has been associated with the phenomenon of anger (Lindemans, 2004). Within the context of the universal, cultural inheritance of the western civilization, it may be argued that anger has been treated as a mixed blessing, being equally described as an empowering, admirable capacity, and a threatening, destructive burden. The roots of dual apprehensions may be traced to Antiquity (see Theoretical background subsection). In this sense of meaning, anger may be regarded a Janus-faced phenomenon.

Our problematic understanding regarding anger may be motivated by some negative aspects of the emotion. First, anger may be experienced as unpleasant by and
elicit fear in those who are the targets of other people’s anger. Second, anger may be regarded as a shameful, uncivilized, and taboo emotion, the expression and admitting of which may be the subject of underreport, denial, and socially desirable responding (Averill, 1983; Håseth, 1996; Novaco, 2003). Third, anger seems to involve an immanent contradiction: the functional (adaptive, normal, and regulated) features of the emotion are easily overridden and offset by the possible consequences of the uncontrolled, malfunctioning, and pathological anger. Consistently, the emotion *per se* has been closely associated with a wide range of negative phenomena, such as psychological distress (Novaco, 2000), social and occupational maladjustment (Deffenbacher, 1992), prejudices toward and victimization of others on the basis of race and sexual orientation (Novaco, 1986), aggressive and reckless driving style (Deffenbacher, Deffenbacher, Lynch, & Richard, 2003), poor physical and mental health (Swaffer & Hollin, 2001), stress-related cardiovascular syndromes and coronary heart diseases (Eckhardt & Deffenbecher, 1995; Miller, Smith, Turner, Guijarro, & Hallet, 1996), mental and personality disorders (Eckhardt & Deffenbacher), and high suicidal risk (Kotler et al., 1993). The connotations of anger with various personality traits, aggressive and violent behaviors, and personality and mental disorders will be touched upon in a later subsection (see *Anger and related concepts*).

**An adaptive human emotion**

Meltzer (1933, p. 285) argues that “Anger has been called the worst propensity of human nature, the father and mother of craft, cruelty, and intrigue, and the chief enemy of public happiness and private peace.” Also according to Diamond (2003, p. 23) “The term “evil” has historically been closely associated with the undeniably destructive aspects of anger, rage, and violence.” With consideration to the frequent occurrences of demonizing apprehensions regarding anger, it is important to emphasize that anger *per se* should not automatically be regarded as a problem: “Anger, even strong anger, is not inherently dysfunctional” (Novaco, 1994, p. 21). This statement clearly indicates that the functional and dysfunctional features of this complex emotion should be distinguished from one another and, also, that anger should be defined as something distinct from the negative consequences to which it may lead.

From a biological, developmental perspective, negative emotions may be considered as vital, psychosocial adaptations, serving individual survival and social communication. This is an important point, as anger has had a bad reputation since ancient times. More to the point, anger may be regarded as a biologically wired, intrapersonal marker, selected and maintained in the evolutionary past because this emotion successfully contributed to the capacity of humans (and animals) to bring about immediate stress reactions of fight or flight (Darwin, 1872/1965; Nesse & Williams, 1996; Novaco, 2000; Spielberger, Reheiser et al., 1995).

In the social, interpersonal context, anger may act as a powerful, communicative marker of individual self-esteem and social standards. The expression of anger may be intentional and purposeful, directed at the removal of hindrances and obstacles. In other words, anger may be used as an effective tool in getting one’s way. Further, anger may act as a moral emotion, reflecting the social apprehensions of the angry individual when things do not turn out as planned. Thus, anger may be an effective response to violations of written and unwritten norms and expectations (Averill, 1983; Tanaka-Matsumi, 1995). On the other hand, this emotion is so basic and automatic that it may arise even when the angry person has little expectation of getting his or her way by means of anger (Berkovitz, 1990).
From the standpoint of maladjustment or psychopathology, it is of vital importance to clarify at what point anger becomes a problem. Novaco (1986, p. 1) highlights the “recurring condition” of angry arousal as problematic since it is an antecedent or activating condition to psycho-social maladjustment and physical violence. Thus, the definition of dysfunctional and maladaptive may be based on the consequences. Regulation and control seem to be key concepts here; unregulated, insufficiently managed anger may imply severe threats to a person’s well-being and problem-solving ability. In summary, unregulated anger may be regarded as dysfunctional, in that it may fuel aggressive acts and threaten individual psychosocial health and interpersonal relationships (Novaco, 2003).

**Thesis overview**

After the initial sketch of the concept of this thesis (see above), the *Theoretical background* subsection expounds on the analysis of the apprehensions regarding anger. Subsequent to classic philosophic and religious sources, the section gives accounts of the evolutionary, behaviorist, and sociocultural perspectives, and describes the multidimensional character of anger. The *Introduction* section continues with the *Psychometric perspective*, including some conceptual and definitional issues that likely have affected the development of this perspective. The psychometric subsection presents some forerunners of the assessment instruments, as formulated by Novaco and Spielberger and, in Table 1, some prominent studies using those instruments are presented. In the remaining subsections, anger is related to aggression, violent criminality, personality traits, and mental disorders. Considering that the offender population is frequently burdened by comorbid problems of anger, aggression, and mental disease, the next subsection provides valuable insight into the Swedish prison population. Finally, the multiple aims of this thesis are introduced. The *Method* section includes descriptions of participants, procedures, ethical considerations, instruments, and treatment of data. The *Main findings and comments* section includes a brief presentation of the most important findings of three empirical studies. The *General discussion* section summarizes the findings and interprets their theoretical and empirical importance from various individual, societal, and clinical perspectives. In the *Limitations and scope* subsection, the limitations of the work described in this thesis, as well as our efforts to counterbalance those weaknesses are explored. Finally, the *Conclusions* subsection summarizes the importance of the work described in the present thesis and puts it within a broad research context.

**Theoretical background**

*Classic philosophic and religious apprehensions of anger*

Long before the emergence of modern, secular science, the ideas of classic philosophy and religious scripts aimed at providing guidance in people’s efforts to understand and control the surrounding world. This is the case regarding, in particular, anger. Obviously, our contemporary comprehension of and attitudes toward anger have their roots in a two-fold, classic tradition that associated anger with images of mixed blessing (Novaco, 1994, 2000). The apprehensions are characterized by parallel sets of metaphors, suggesting expression and utilization as well as suppression and control (Novaco). Taking into account the large number of discourses on anger in various philosophical and religious sources, the curious reader may wonder: is there anything new under the sun? This subsection touches upon pre-scientific,
philosophical, ethical, and religious considerations regarding anger and their parallels to modern science.

In Plato’s division of the human psyche, anger was a basically animal passion. Although the emotion of anger had some links to reason, it was regarded as an undesirable affection of the body, which contaminated the pure knowledge of the soul, and distracted from the sublime ideal of pure thought. Epictetus and the Stoics also recommended that people seek release from strong negative and positive emotions, but did this for a different reason. In line with their determinist view of the world, they deemed emotions unnecessary excitement in a existence where everything had been foreordained (Leahey, 2004). According to Kassinove and Sukhodolsky (1995, p. 22), Epictetus is also significant in that he formulated ideas that closely correspond with the quintessence of cognitive psychology: “People are not disturbed by events, but by the views and opinions they have of those events.”

Aristotle (1991) regarded anger as a natural, but dangerous passion of mankind. In the *Nicomachean Ethics* (p. 96), he expressed a pragmatic apprehension regarding anger: “The man who is angry at the right things, and with the right people, and, further, as he ought, when he ought, and as long as he ought, is praised.” Fools, on the other hand, were wrong on one, or several of the above points. In the Aristotelian categorization, angry persons could be akrocholoi (choleric or easily angered), pikroi (bitter, retaining anger for a long time) or chalepoi (ill-tempered, vindictive). Aristotle also recognized that “…it is not easy to define how, with whom, at what, and how long one should be angry and at what point right action ceases and wrong begins” (p. 96).

Consistently, he emphasized regulation and control, i.e., “…we must cling to the middle state” (p. 98), and propagated the cathartic, purifying benefits of the enjoyment of classic tragic plays (Novaco, 1986). The concept of catharsis became the subject of investigation during the era of Behaviorist psychology.

Early formulations of trait psychology may be exposed in the work of Hypocritus. He proposed to explain individual differences of temperament, behavior, and vulnerability to sickness, by classifying people as phlegmatic, choleric, melancholic and sanguine types based on the humors (i.e., body fluids). As being characterized by a surplus of yellow gall (i.e., bile), the choleric type was supposed to be easily irritable, temperamental, and impulsive (Qvarsell, 2004).

The *Old* and *New Testament* demonstrate ideas and attitudes that may be regarded as further contributions to the dual tradition. Anger is inherent in humans, because God created them that way. The anger of humans may even be morally justifiable in situations when it motivates a fight against injustice, and, when it protects against indifference to sin and iniquity. Nevertheless, humans are half-witted, and selfishness or ignorance almost always distorts their perceptions. This is obvious in the writings of James: “For the wrath of man worketh not the righteousness of God” (1:20). Man’s expression of anger is the subject of divine condemnation: “Wherefore, my beloved brethren, let every man be swift to hear, slow to speak, slow to wrath” (James 1:19). Both religious works link temper to sin in numerous contexts. Man’s anger demonstrates his lack of faith, and thus provides a foothold to the Devil. Hot-headed reactions are associated with distorted cognition and mental weakness: “Be not hasty in thy spirit to be angry: for anger resteth in the bosom of fools.” (Ecclesiastes 7:9). Not only the expression, but also the harboring of a grudge is condemned: “Ye have heard that it was said of them of old time, Thou shalt not kill; and whosoever shall kill shall be in
danger of the judgment: But I say unto you, That whosoever is angry with his brother without a cause shall be in danger of the judgment.” (Matthew 5:21-22). The Lord appreciates self-control: “He that is slow to anger is better than the mighty; and he that ruleth his spirit than he that taketh a city” (Proverbs 16:32), or, “Cease from anger, and forsake wrath: fret not thyself in any wise to do evil” (Psalms 37:8) (The Holy Bible, King James Version, 2004).

The great Christian philosopher of the 13-th century, Thomas Aquinas, applies deductive logic in discussing the divinely immanent, static character, the so-called faculty of phenomena. Aquinas’s *The Summa Theologica* (2004) includes, among other things, short essays on the good versus evil nature of anger, and, alternatively, on the excellent versus defective objective of the angry person. These short essays are formed to be responses to the “objections” of the Philosopher (i.e., Aristotle). Aquinas explains the dual character of anger as being caused by the contrary passions of hope (which is of good), and sorrow (which is rooted in evil). Anger is a desire for vengeance, and an act of justice, motivated by some unjust treatment, which might, unfortunately, deteriorate the command of reason. Aquinas warns that long lasting anger may beget hate by a process of causality. Most importantly, Aquinas emphasizes man’s free will and responsibility in relation to anger (Aquinas, 2004).

Aquinas’s position on free will and reason foreshadows the tradition of the Middle Ages, the Renaissance, and the Enlightenment period, associating anger with defect, irrationality, lack of control, uncivilized forces, and mental disorder (Novaco, 1994; Qvarsell, 2004). These apprehensions were also incorporated into the growing body of medico-legal sciences. In the classical legal tradition, humans were regarded as agents, guided by free will and rationality (i.e., characteristics that the mentally insane lacked by definition). With the growing influence of doctors in courts, it became a practice to equate the perpetrator’s furious, pathological rage with lack of control, and insanity. As the perpetrator was insane and, by definition, lacked evil intent, he had no legal responsibility and could be sent to an asylum rather than being punished. According to Qvarsell, passionate angry affect is still sometimes regarded as a mitigating factor in modern legal practice.

**Modern, secular science: Evolutionary and biological bases of anger**

Charles Darwin’s theory of evolution opened up a new, biological direction for understanding rage (anger) and fear (anxiety), considering both as innate and universal characteristics of animal and human behavior (Spielberger, Reheiser et al., 1995). Darwin’s genius may be found in his integrating pre-existing concepts (e.g., survival of the fittest) into one grand theory, and in that he invented the principle of natural selection as a systematic actor in the process (Barrett, Dunbar, & Lycett, 2002; Leahey, 2004).

Similar to the evolutionary development of intelligence, memory, and reason, emotions have evolved over countless generations in animals and humans (Darwin, 1859; Spielberger, Reheiser et al.; Spielberger, Sydeman, Owen, & Marsh, 1999). Anger may be regarded as a part of a biologically wired, internal alarm system, selected and maintained because of its capacity to cope with the environmental challenges in the evolutionary past (Darwin; Nesse & Williams, 1996; Novaco, 2000; Spielberger, Reheiser et al.). The profound changes in homeostasis triggered by anger must have proved themselves to be good strategies in coping with environmental challenges. Obviously, indifference to the certain fatal danger of an encounter with a saber-toothed tiger would have been a disadvantageous survival mechanism. Negative
emotions also exist universally in all humans regardless of cultural variations (Darwin, 1872/1965).

Modern evolution theorists continue to regard emotions as powerful, psychosocial adaptations with vital functions on different levels of individual survival and social communication. Negative emotions (anger) have been considered as defensive adaptations to highly stressful and threatening occurrences; anger prevents further loss in that it effectively modifies behavior (Nesse & Williams, 1996). Fessler, Pillsworth, and Flamson (2004) postulated a sex difference in the triggers of risk-taking behaviors: men are triggered by experiences of anger, women by disgust. Also, the emotional system and the ability to experience emotions develop early, during the first 6 months after birth (Lewis, 1993; Tremblay & LeMarquand, 2001) and the expression of anger has been demonstrated in infants as young as 2 months (Lewis, Alessandrini, & Sullivan, 1990). Modern anatomical discoveries have provided support for the evolutionary hypothesis of emotions: emotions often involve phylogenetically old brain structures that have evolved prior to cognition, verbal capacity, and consciousness (Le Doux, 1998).

Evolutionary ideas are often falsely discarded as biological determinism or reductionism, with claims that they do not account for cultural variations. However, modern evolutionary theory declares the frequently invoked “nature vs. nurture” dichotomy to be false (Barrett et al., 2002). As evolutionary theory does not predict invariable reactions, intercultural variability should not be viewed as evidence against it. The capacity of flexible responses, called phenotypic plasticity, which predisposes humans to pay attention to varying circumstances, is “the most important of the human evolutionary adaptations” (Barrett et al., p. 3).

In summary, the dynamic explanatory context of the modern, evolutionary perspective represents a vital contribution to the understanding of emotions (Buss, 1998; Gazzaniga, Ivry, & Mangun, 1998). Two evolutionary theories are of particular interest in connection with anger:

**The strategic interference theory**

This theory claims a profound difference in the sexual and reproductive strategies of the sexes. Consistently, the strategy employed by women (i.e., withholding sex) blocks or interferes with the strategy of goal achievement and self-fulfillment of men (i.e., sexual conquest). This, in turn, leads to conflicts between the sexes (Buss, 1998). Negative, unpleasant emotions have evolved to help solve the problem of strategic interference in at least three different ways: they (1) guide our attention by pointing out conflicts and screen out less relevant events, (2) promote the encoding of these events in memory, and (3) trigger actions aimed at solving the problem at hand (Buss).

**The social attention holding theory**

Status, prestige and dominance are evolutionarily selected benefits, providing high-ranking individuals with more access to survival and reproduction resources. Disrepute, dishonor, humiliation, and loss of face are various forms of threats to the highly-ranked individual. Negative emotions, such as anger, envy, and shame mobilize against threats of, or actual loss of, status in the context of a dominance structure (Gilbert, 1998). Status and dominance are also related to the prediction that the skew pattern of human sexual selection triggers greater intrasex competition and more aggressive status striving in men than in women (Buss, 1998). Empirical research supports this idea: (1) an overwhelming proportion of violence is committed by men.
with other men as targets, and also (2) men who have suffered subsequent loss are more prone to violence than men who have not (Buss).

Anger and the psychology of observable behavior

With the advent of behaviorism, the phenomenological study of emotions was abandoned and replaced by a focus on environmental antecedents, physiological manifestations, and objective behavioral consequences. In line with the logico-empirical, positivistic preference for empirical observation, regarded as the exclusive source of knowledge, behaviorists regarded the study of emotions, intentions, and mental entities in general as scientific nonsense, dealing with the unobservable contents of the mind's black box (Kassinove & Sukhodolsky, 1995; Leahey, 2004). If mentioned at all, anger was studied as a manipulated precondition to aggressive behavior, under strictly controlled, experimental conditions (Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995). The self-report data from experiments and structured diaries represent, however, valuable behaviorist contributions to the later research on anger, in that they provide knowledge on the various properties (e.g., frequency, duration, cause-effect relations, and situational activators) of anger for both sexes and different ages (Novaco, 1986).

Frustration-aggression theory

The early, predominant behavioristic approach to aggression is represented by the frustration-aggression theory (Dollard, Doob, Miller, Mowrer, & Sears, 1939). Although it explicitly rejected instinctual models, the frustration-aggression theory may be regarded as a reinterpretation of Freud’s early idea that aggression is a reaction to the blocking of the pleasure principle, incorporating this idea into the learning theory framework (Novaco, 1986; Spielberger, Reheiser et al., 1995). According to this theory, aggression is directly caused by frustration, which is defined as any condition that interferes with a goal-directed action (Dollard et al.).

Berkowitz’ cognitive-neoassociationistic theory

The frustration-aggression theory in general, and the neglect of anger in particular, was criticized by Berkowitz (1989), who argued that negative affect and appraisal components intervene between the objective situation and individuals’ reaction to it. More specifically, “a barrier to the achievement of an expected gratification activates the anger-affective aggression syndrome only to the extent that it is decidedly unpleasant” (Berkowitz & Harmon-Jones, 2004, p. 117). In the cognitive-neoassociationistic model of anger (Berkowitz, 1990), feelings, thoughts, memories, and physiological and expressive-motor reactions are connected in an associative network, within which they may mutually activate each other. Most importantly, the initial, rudimentary, negative affect may give rise to anger related feelings (e.g., anger, hostile ideas, and aggressively disposing memories), which in turn may or may not be modified, differentiated, intensified or suppressed at a later point, by means of higher-order cognitive reflections (i.e., appraisals and causal attributions). Thus, a strong negative affect initially activates the various components of the cognitive-neoassociationistic network, and the higher-order, cognitive processing (e.g., interpretive schemes, social rules and expectations, cost and benefit anticipations), when involved, may regulate the final behavioral outplay (Berkowitz & Harmon-Jones, 2004). Accordingly, emotions like fear and anger do not themselves produce, they merely parallel, or motivate, fight or flight tendencies.
Berkowitz (1990) and Berkowitz and Harmon-Jones (2004) noticed that alternative, parallel, and negative internal states (e.g., pain and social stress) increased the probability of anger and anger instigated aggression. This relates to the concept of excitation transfer (Zillman, 1971). Excitation transfer accounts for the process according to which anger, directed toward an acute, present source of irritation, may be enhanced and intensified by associations to a prior anger-provoking agent.

Another important, behavioral contribution to the research on anger is represented by the reformulation of the classic concept of catharsis (Konecni, 1975), thus, that “…any form of expression of aggression should bring about a decrease in the amount of subsequent aggression” (p. 77). According to Konecni (p. 96) “On one hand, it is suggested that the level of anger may be one of the major determinants of the amount of aggressive behavior: on the other, expression of aggression appears to be a particularly potent factor leading to a decrease in the level of anger, and thus to a decrease in the amount of aggressive behavior.” Thus, Konecni formulated the bi-directional (i.e., reciprocal) causality acting in the process of catharsis. The catharsis hypothesis inspired subsequent studies on whether media violence, fighting sports, and psychotherapy affected the probability of violence in people.

The behavior-analytic theory

The behavior-analytic theory (i.e., a modern, less orthodox offshoot of behaviorism) does not deny the existence of thoughts, intentions, emotions, and other internal phenomena, but rather chooses to view them in much the same way as observable behaviors (Salzinger, 1995). According to Salzinger, anger and aggression are nonseparable phenomena, learned as any other behavior, through conditioning principles. Anger and aggression also share the same environmental elicitors and consequences. Anger is defined as the angry subject’s demonstration of this emotion, in the form of both overt and covert components. These components include actions (hitting, destroying), subvocal actions (verbal aggression, yelling), mental imagination (inner picturing of aggressive scenes), and various physiological and biochemical reactions (fluctuations of blood pressure and hormonal secretion). People recognize anger because angry persons demonstrate aggressive outward signs, which have been previously associated with outbursts of anger. Most importantly, instead of residing within the individual (e.g., internal traits and individual proneness), the causes of anger are to be found in the current environment, related to previously learned responses in similar situations. Furthermore, Salzinger distrusts self-report instruments as being based on the notion that people can tell others how they feel. More specifically, Salzinger argues that a distance, or gap exist between language (i.e., verbal behavior) and the original, unobservable, highly private experiences, which language is aimed at communicating. The statements of a questionnaire “…are reports about anger, rather than anger itself” (p. 72).

The cross-cultural theory of anger: culture and language

In line with the previous emphasis on the socially communicative character of anger (see Anger: The focus concept of this thesis subsection) it may be argued that culture (i.e., the man-made part of the environment) has a considerable impact on the construction and display of the anger emotion. Angry feelings are embedded in and influenced by the cultural and subcultural context in which they occur: one’s appraisal of a situation as anger provoking, and subsequent handling of that information, elicits norms and values which are encouraged in a particular milieu (Averill, 1983; Daun,
1998; Tanaka-Matsumi, 1995). Regarding the culturally distinct nature of psychological phenomena, Kitayama (2002) argues that the validity of cross-cultural comparisons of attitudinal and personality variables may be threatened by culturally unique “ecology, language, history, customs, lay theories and common sense” (p. 90). Furthermore, he considers “daily routines, practices, interpersonal rituals, and discourses, styles of conversation, and social institutions” (p. 90) as unique features of societies and cultures, which contribute to cross-cultural differences.

Language- a major demonstration of a culture

Levy (1984) distinguished between “hypercognised” and “hypocognised” emotions, on the basis of the amount of knowledge a society possesses of a particular emotion. Russel (1991) provides a long list of emotion-related words in different languages that do not exist in English, arguing the possibility that the concept of emotion may be culture bound: that people of different cultures categorize emotions in somewhat different ways. More specifically, translations of the English word “anger” may not entirely cover the complex and subtle, cultural meanings of the corresponding concepts of emotion in other languages (Russel; Wierzbicka, 1994). Language may also demonstrate the distinctness and uniqueness of deviant subcultures. Verbal expressions (e.g., terms, phrases, and slang words) may be interpreted as characteristic, composing parts of what Miller (1996) calls a “distinctive cultural system” (p. 104), which generates the deviant subculture of gangs.

In summary, it may be argued that cultures differ in the quantity and range of emotion words, expressions, and linguistic tools, and that this difference may expose culture specific norms and regulations, illustrating the particular significance of an emotion for that society (Levy, 1984; Tanaka-Matsumi, 1995). Cultural awareness regarding language is of major importance when one translates words from one language to another; one should be cautious in automatically assuming the equivalence of cultural meanings between those words (Tanaka-Matsumi).

The Swedish mentality

Regarding the general discourse and conversational style in Swedish society, Daun (1998) characterized the conversation context by the frequent occurrence of redundant information and phrases: “tack,” “tack detsamma,” “ja,” “ja visst”; in English: “thanks,” “thanks, the same to you,” “yes,” “yes indeed”. According to Daun (p. 64), these phrases merely serve as expressions of politeness and subordination of oneself that promote the reinforcement of agreement and signal good intentions between the conversing parties. The frequency of linguistic tools of that kind may expose the normative demand of consensus in the homogeneous Swedish culture, within which people, until very recently, have had high levels of similarity in ethnicity, religion, opinions and attitudes. In that cultural environment of unanimity, it may be regarded as desirable for members to stay on good terms, remain in control, and avoid, or solve conflict, by keeping silent. In fact, a face-to-face conflict may represent the greatest challenge to similarity and conformity. Consistently, the members of that cultural milieu are encouraged not to express any opinion that may be considered by others as threatening or provocative. Hot temperament, loud speech, social extroversion, and unrestrained emotions are regarded with suspicion. In particular, there are strong normative demands regarding the control and suppression of strong and spontaneous emotions (p.141). The frequent use of pauses in the Swedish conversational context may promote moderation of opinions and attitudes: a pause
gives one the time to think over one’s next sentence. Daun refers to a cross-cultural comparison with Finnish, Italian, and South-Korean participants, in which Swedes reported the lowest frequency and intensity of anger (p. 135). In contrast to the Swedish cultural climate, Daun argues that social extroversion, open-mindedness, communicative competence and active personal style are promoted to a high degree in American culture.

**The multidimensional anger concept**

It was previously argued (see *Anger: the conceptual focus of this thesis* subsection) that the subjective, internal occurrence of anger involved multiple, more or less overt and observable affective (phenomenological), cognitive, physiological, and behavioral components, occurring in parallel or sequentially. Thus, another way to approach emotions (anger) is through dimensionality, a notion that warrants discussion before broaching the psychometric approach, the explicit aim of which is to assess the various dimensions of anger.

**Thinking, feeling, and doing make it happen**

The affective (phenomenological) component of anger refers to the subjective, individual labeling of one’s inner state of mind as anger, and nothing else. According to the Yerkes–Dodson law, also called the single continuum-theory (Yerkes & Dodson, 1908), the various intensities of anger, such as mild annoyance, irritation and the more extreme states of fury and rage, still represent the same phenomenological concept: anger. Thus, whatever the intensity, the emotion is experienced along a single continuum. Opposing this argument, the Ellis’ dual-continua theory (1977) holds that emotions can be experienced along different axes; moderate emotions (irritation and annoyance) exist on a first axis, irrationally distorted emotions (e.g., rage) on a second.

The cognitive component of anger addresses mental phenomena (e.g., appraisals, memories, perceptions, and misperceptions) that influence or bias the thought processes of angry individuals. Angry persons are biased decision-makers, in that anger takes the place of every possible alternative explanation (Novaco, 1986; 1994; 2000). In anger, the initial perception of another’s behavior as unfair and undesirable becomes exaggerated through multiple, distorted cognitive processes of overgeneralization, until the target person himself is perceived as intolerably and intentionally bad (Ellis, 1995). However, researchers may lay various emphases on the role of conscious, cognitive processing as a prerequisite in anger. Novaco assumes that the cognitive mediation in anger “should be understood as an automatic and intrinsic part of the perceptual process” (1986, p. 14), and thus, cognitive mediation does not necessarily involve an explicit, complex, thinking process. This argument is in line with Berkowitz’s (1990) view on the secondary and subsequent role of higher-order cognitive reflections (i.e., appraisals and causal attributions) in anger.

Various physiological mechanisms are also involved in the anger reaction. The anger-provoking stimulus activates a whole orchestra of autonomic, endocrine, and cardiovascular physiological responses known as stress reaction, or fight or flight capacity. This stress reaction includes states that differ from homeostasis: tension in the facial and skeletal musculature, dilated blood vessels, accelerated heart rate and perspiration, increased systolic and diastolic blood pressure, tightness in the skeletal muscles, queasy feeling in the stomach, skin tension and sweating. The stimulated secretion of the catecholamines epinephrine and norepinephrine by the adrenal medulla, and of glucocorticoids by the adrenal cortex, mobilize the body for an
immediate anger reaction (Novaco, 2000). Similar to the fear-response, activation in the corticomedial amygdala has been identified as having great relevance for anger and attack priming. Low levels of the neurotransmitter serotonin and imbalances in the serotoninergic system have been recognized as increasing anger and impairing emotion modulation (Novaco; Rosenzweig, Leiman, & Breedlove, 1999).

Anger may be accompanied by more or less observable behavioral components and by inclinations to overt actions. Facial muscle-induced changes result in the typical angry facial expression with dilated nostrils, flushing cheeks, and the eyebrow moving inward and downward. Also, the jaws tend to tighten. Verbal expressions such as yelling, screaming, and arguing may communicate the angry feeling as well. Changes in body position reflect activation in skeletal muscles: standing up, leaning forward, and clenching the fists may promote dominance in a physical confrontation. However, one should particularly keep in mind the normative role of culture on masking the overt expressions of anger (Novaco, 2000).

The psychometric approach to anger

The term “psychometrics” refers to the study of statistically processed, psychological knowledge. Psychometric assessment instruments usually follow the “nomothetic” approach, in that they have the purpose to investigate the distribution of scores in a particular population (Gudjonsson, 2001). In particular, psychometric instruments either aim to discriminate between individuals based on a psychological characteristic (e.g., individual anger disposition), or to assess variation of that characteristic within the same individual on separate occasions (e.g., how angry a person is in various situations, medical conditions, or phases of therapeutic intervention). Accordingly, psychometric instruments may represent a vital source of knowledge in the screening and identification of anger problems, as well as in the design and evaluation of anger management interventions (Novaco, Ramm, & Black, 2001). The psychometric assessment procedure is a structured and systematic method of collecting scientifically valid and reliable data. A variety of psychometric assessment instruments, self-report questionnaires, and scales are composed of a number of items (e.g., statements) and a number of response categories (e.g., amount or intensity) that pertain to the items. Respondents completing the instruments are required to position themselves relative to each item by noting the response category that fits them best. In the next step, the individual responses are scored and summarized into aggregate measures (i.e., scales), and are analyzed through a set of strictly regulated, standard statistical procedures. The results of such analysis may be used for statistical inferences of various kinds (Gudjonsson).

Before proceeding further with the introduction of the psychometric perspective on anger, and describing some of the dominant and successful anger models within this approach, it is important to touch briefly upon some substantial scientific issues that may have had a vital influence on the development of psychometric anger assessments (Eckhardt, Norlander, & Deffenbacher, 2004). These issues are conceptual ambiguity and scientific and clinical neglect of anger.

Conceptual ambiguity and the problem of definitions

Today, there seems to be at least some consensus on the definition of aggression as an outwardly expressed, intentional behavior, aimed at causing some form of direct physical, psychological harm or indirect damage (Novaco, 2000). According to
Anderson (2000, p. 163), “Human aggression is behavior performed by one person (aggressor) with the intent to of harming another person (the victim) who is believed by the aggressor to be motivated to avoid that harm.” As sharply distinguished from aggression, anger is a negatively toned emotion, which inherently and quite automatically triggers inclinations to antagonistic, sometimes aggressive reactions toward sources of provocation (Kassinove & Sukhodolsky, 1995; Novaco; Spielberger et al., 1999). Hostility has been described as a set of mental images, apprehensions, and attitudes, which may motivate aggression (Eckhardt et al., 2004; Spielberger, Reheiser et al., 1995). However, the closer one scrutinizes definitions and assessment attempts, the more complex and contradictory the picture appears. Traditionally, there has been considerable conceptual ambiguity and a theoretical overlapping of the related phenomena of anger, hostility, and aggression. These concepts have also been used interchangeably in research literature (Eckhardt & Deffenbacher, 1995; Eckhardt et al.; Spielberger, Reheiser et al.; Spielberger et al., 1999; Tsytsarev & Grodnitzky, 1995). Without any exaggeration, it may be argued that there exists a panoply of ideas on the concepts of anger and aggression: depending on whether they are the same or different concepts, how closely related they are, and where the borders between them run. The frequently emphasized and demonstrated association between anger and aggression is, and may probably remain, a puzzle.

Scientific and clinical neglect of anger

Whereas feelings and emotions make up a considerable portion of all that we call human behavior, until the very recent past the study of these aspects have been surprisingly ignored and neglected (or avoided) in psychology and other social sciences (Diamond, 2003; Eckhardt et al., 2004; Kassinove & Eckhard, 1995; Novaco, 2000; Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995). Much of the neglect may be rooted in the logico-empirical, positivistic heritage, which emphasizes empirical observation as the only source of knowledge, and therefore regards mental processes (emotions) either as hard to capture, or as metaphysical foolishness (Kassinove & Sukhodolsky, 1995; Leahey, 2004). The taboo nature of anger may also depend on social labeling mechanisms; according to which the open expression of anger runs a risk of being regarded as bad manners, being out of control, or behaving savagely (Daun, 1998; Novaco, 2003). Kassinove and Sukhodolsky counted the references to words denoting negative feelings in psychological literature (PsycINFO) for a period of 25 years (1970-1994). The authors reported fewer instances of “anger” in comparison to “depression” and “anxiety”. Whereas the keywords ”depression” and “anxiety” had increased from 4,000 to 14,000-15,000 occurrences each year, the corresponding count of the keywords “anger” and “hostility” remained fewer than 2,000.

Tafrate (1995) investigated psychotherapeutical literature with a focus on multi-session anger treatment of adult patients and found that only 17 studies had been performed in the period 1974–1994. DiGiuseppe (1995) speculates that therapeutic interventions are not very successful in cases involving angry patients, and thus, may provide poor incentives for therapists. Patients with anger problems are often forced into therapy against their will; they may not recognize anger as their problem, instead expecting therapeutic guidance in their efforts to modify the behaviors of others (DiGiuseppe). Deffenbacher (1992) and Novaco (1986) explicitly point out the lack of clinical assessments and diagnostic criteria for anger as substantial obstacles in the areas of clinical psychology and psychiatry.
The development of psychometric anger assessments

Since the mid-1950’s, a number of systematized psychometric self-report scales of anger have been developed. Due to space limitations, only the forerunners of the assessment instruments used in this thesis will be introduced here. Spielberger et al. (1999) consider the Buss-Durkee Hostility Inventory, BDHI (Buss & Durkee, 1957) to be the most carefully constructed among the early psychometric measures. The BDHI includes 75 true-false items grouped into seven components (scales), namely, the Assault, Indirect Aggression, Irritability, Negativism, Resentment, Suspicion, and Verbal Aggression scales. The inventory focuses on a broad concept of hostility, namely, how the anger manifests itself, but does not address the underlying reasons of anger. The BDHI has been frequently criticized for item inconsistency, factor instability, and an oversimplified true-false response scale. Buss’s early definition of aggression seemed to be problematic, as it ignored intention (Eckhardt et al., 2004; Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995). Subsequent revision of the BDHI resulted in a new instrument, the Aggression Questionnaire, AQ (Buss & Perry, 1992) (see the Methods section for a description of AQ). Since the early 1970’s the value of differentiating related concepts has promoted the development of new psychometric measures; the psychometric perspective of anger has been dominated by the theoretical and assessment models of Novaco (1975) and Spielberger (1980). The Novaco and Spielberger models of anger complement each other, and are frequently applied in psychometric studies.

The Novaco model and assessment of anger

Novaco (2000, p. 170) conceptualizes anger as a “negatively toned emotion, subjectively experienced as an aroused state of antagonism toward someone or something perceived to be the source of an aversive event.” In Novaco’s model, the main focus is on the assessment of three interrelated and clinically relevant cognitive, arousal, and behavioral dimensions of anger. These dimensions have a reciprocal influence upon each other in response to external, anger awakening conditions. Whether the angry person chooses expression or suppression of anger depends on a variety of factors, but he or she experiences multiple cognitive, physiological, and behavioral inclinations to act upon the emotion. Within this model, the focus is placed on the general potential for angry reactions, whether expressed or suppressed. Unlike Spielberger, Novaco does not propose a strict distinction between the expression and suppression of anger. The Novaco Anger Scale merely assesses clinical mediation of anger and the general potential for angry reactions.

Novaco Anger Scale, NAS (1990)


Part A contains 44 items, which assess the clinically oriented cognitive, arousal, and behavioral domains of anger, and a three-point response scale (“Never true,” “Sometimes true,” and “Always true”). The cognitive domain of NAS-1990 assesses
the cognitive mediation of anger which is operationalized by four subscales, namely, \textit{Attentional focus} (selective attention and negativity bias to provoking cues), \textit{Suspicion} (exaggerated expectations of mistreatment by others), \textit{Rumination} (tendency to dwell on anger experiences) and \textit{Hostile attitude} (exaggerated readiness for antagonistic and overgeneralized responses). Cognitive mediation is highly automatic, immediate, and intrinsic to perception, and thus does not necessarily presuppose explicit, conscious thinking.

The arousal domain of NAS-1990 covers physiological activation processes in various autonomic and central nervous areas, in the cardiovascular, endocrine, and limbic systems, as well as alterations in skeletal tension. The arousal subscales are \textit{Intensity} (tendency for “hot responding”), \textit{Duration} (prolonged anger reaction), \textit{Somatic tension} (somatic reactions that predispose for anger reactions), and \textit{Irritability} (affective readiness to respond with anger to perceived provocations).

The behavioral domain of NAS-1990 focuses on the role that action impulses play in anger. The postulated bi-directional relation between anger and aggressive behavior indicates that anger might be a consequence of perceived behavioral inclinations. The subscales are \textit{Impulsive reaction} (tendency to react with anger in absence of inhibitory controls), \textit{Verbal aggression}, \textit{Physical confrontation}, and \textit{Indirect expression} (the tendency for displaced anger to substitute targets).

The NAS Total is a total score for anger disposition, being the sum of the three NAS-1990 domain scores (Novaco, 1994).

Part B is the comprehensive version of the Novaco Provocation Inventory, NPI (1975), which provides an index of anger intensity and generality across five provocation categories. These provocation categories are \textit{disrespectful treatment}, \textit{unfairness/injustice}, \textit{frustration/interruption}, \textit{annoying traits}, and \textit{irritations}. Respondents rate the degree of anger they would experience in each situation on a four-point response scale (from “Not at all” to “Very much”).

The subsequent revision of the NAS-1990 resulted in the Novaco Anger Scale, version 1998 (NAS-1998; Novaco, 2003), and the Provocation Inventory (PI; Novaco, 2003) which are the remodeled parts A and B, respectively, of NAS-1990. Compared with NAS-1990, the version 1998 includes vital improvements. Most importantly, the Regulation scale has been invented, the aim of which is to investigate individual efforts to control angry impulses.

\subsection*{The Spielberger model and assessment of anger}

According to the definition of Spielberger, Reheiser, et al. (1995, p. 52) “anger usually refers to an emotional state that consists of feelings that vary in intensity, from mild irritation or annoyance to intense fury and rage.” The notion that anger and rage differ only in intensity corresponds to the Yerkes–Dodson law, or single-continuum theory of emotional experiences (see \textit{The multidimensional anger concept} subsection). Anger, as an experience, may be a fluctuating emotional state, or a more stable personality trait. Anger is further characterized by varying duration and forms of expression; anger may be expressed openly (anger out), physically, or verbally, toward the source of irritation or toward substitute targets. Alternatively, anger may be withheld and suppressed (anger in). Per definition, anger constitutes the most fundamental, basic part of the \textit{AHA!} syndrome (Spielberger, Reheiser et al.; Spielberger, Ritterband et al., 1995). The second member of the \textit{AHA!} syndrome, hostility, is a complex set of feelings and attitudes that involves the frequent experience of anger and may motivate aggressive behaviors toward hated categories.
(e.g., objects, people, and occurrences). The third member is aggression, which generally refers to punitive, destructive behavior. These assumptions underlie the construction of the various versions of STAXI [STAXI, Spielberger, 1988; STAXI-2, Spielberger, 1999].

The State-Trait Anger Expression Scale, STAXI (1988)

The State-Trait Anger Expression Scale, STAXI (Spielberger, 1988) is a psychometric instrument intended to measure the separate dimensions of experience, expression, and control of anger. The first dimension, which is experience, involves a theoretical distinction between state and trait, and is assessed by separate scales (State-Trait Anger Scale, STAS; Spielberger, 1980). The State anger scale (S-Anger) captures a fluctuating, situation-specific (i.e., most frequently specific to the test situation), psycho-biological anger state, which is a direct function of experienced irritations. When completing the S-Anger scale, respondents indicate how intensely irritated and angry they are at a particular point in time (i.e., “Not at all,” “Somewhat,” “Moderately so,” and “Very much so”).

The Trait anger scale (T-Anger) conceptualizes anger as an individually stable, personality trait, and general inclination to angry reactions. Respondents indicate the frequency of their angry experiences on a four-step response scale (“Almost never,” “Sometimes,” “Often,” and “Almost Always”). A person with a high level of trait anger perceives several situations as anger provoking, and experiences those situations as having higher intensity and longer duration. Consistently, high scores on T-Anger are related to measures of hostility and aggression. People who frequently experience angry arousal also have the tendency to act out (Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995).

The expression dimension of STAXI measures individually characteristic ways to act upon anger. The particular distinction between anger in and anger out styles has been emphasized by a long tradition of psychological research, which investigated the relationship between the expression versus suppression of anger and a wide spectrum of bio-psychological problem conditions. This line of research was initiated by Funkenstein, King, and Drolette (1954), who found an increase in the pulse rate of anger-suppressing students. Consistent with this, the STAXI puts emphasis on the discrimination between outward expression and inward suppression. These separate styles of anger expression are captured by the separate Anger Expression In (AX-In) and Anger Expression Out (AX-Out) scales of STAXI (Spielberger, Ritterband et al., 1995). Respondents indicate on a four-point response scale (“Almost never,” “Sometimes,” “Often,” and “Almost always”) how often they act on their experiences of anger in a suppressing and an expressing manner, respectively. AX-Out scores are correlated with measures of aggression. AX-Out and AX-In are theoretically unrelated (Spielberger, 1988).

The third dimension, control, is captured by the Anger control (AX/CON) scale of STAXI. This scale attempts to measure the frequency of control attempts of angry feelings on a four-point response scale (“Almost never,” “Sometimes,” “Often,” and “Almost always”). High-scoring persons on the AX/CON scale spend much time and energy in self-monitoring and control.

In summary, STAXI includes 44 items: 10 S-Anger items, 10 T-Anger items, and 24 additional items, namely, 16 for the AX-In and AX-Out scales, and eight for the AX/CON scale (Spielberger, 1988). A recent revision of STAXI resulted in the expanded 57-item STAXI-2 (Spielberger, 1999). The STAXI-2 differs from STAXI in
two major ways. First, the items of S-Anger scale have been organized into three subscales. Second, the AX scales of STAXI have been revised in terms of direction, and thus both the expression and control scales have inwardly and outwardly directed forms in STAXI-2.

The validity of NAS and STAXI

Many studies have investigated the psychometric qualities of NAS-1994 and/or STAXI in various, clinical and nonclinical populations. Some of the most important studies of NAS-1994 and/or STAXI are presented in a chronological order in Table 1. The studies have been taken into consideration on the basis of their theoretical focuses on the adaptation of STAXI, or, their choices of clinical and prisoner participants. The studies of Table 1 are also integrated in the Anger and associated phenomena subsection. As it may be concluded from the studies of Table 1, NAS-1994 and STAXI are well-crafted instruments that have demonstrated appropriate validity and good scale correlations with related instruments in the various student, community, and offender samples.
<table>
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<th>Studies</th>
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<td>Novaco (1994)</td>
<td>NAS-1994</td>
<td>California State Hospital patients ( N = 142 )</td>
<td>NAS is a useful tool in understanding violence risk and guiding and evaluating clinical treatment. Appropriate reliability, proper concurrent, discriminant, and predictive validity. Anger is a better predictor variable of future violence than previous violent acts. High to moderate correlations of NAS scales and subscales with concurrent scales of anger (STAXI) and with scales of related concepts: aggression, hostility, rumination, impulsivity, and irritability.</td>
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<tr>
<td>Kroner &amp; Reddon (1995)</td>
<td>STAXI (S-Anger, T-Anger, AX-Out, AX-In, AX/Con scales) Basic Personality Inventory (BPI, Jackson, 1989)</td>
<td>Male prisoners ( N = 137 )</td>
<td>Significant relationships of anger with Psychopathology. High to moderate positive correlations of the T-Anger and AX-Out scales with BPI-Interpersonal problems Impulsive Expression, Deviation, and Alienation scales and the AX-In with BPI Anxiety, Depression, Social introversion, and Self-Deprivation scales. The AX/Con scale had negative correlations with all BPI Scales, highest with Interpersonal problems, Impulsive Expression, and Social introversion scales.</td>
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<tr>
<td>Williams, Boyd, Cascardi, &amp; Poythress (1996)</td>
<td>NAS-1994, Aggression Questionnaire (AQ; Buss &amp; Perry, 1992)</td>
<td>Male prisoners ( N = 200 )</td>
<td>The NAS Cognitive and Behavioral components were strongly correlated with the two AQ factors Physical Aggression/Anger and Verbal Aggression/Hostility.</td>
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<td>Håseth (1996)</td>
<td>STAXI-N</td>
<td>Young adults ( N = 1,235 )</td>
<td>Norwegian validation of STAXI. Appropriate factor structure, reliability, and intrascale correlations of the STAXI scales and subscales with each other.</td>
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<td>Barbour, Eckhardt, Davison, &amp; Kassinove (1998)</td>
<td>STAXI</td>
<td>Maritally violent ( N = 31 ), maritally dissatisfied, nonviolent ( N = 23 ), and maritally satisfied nonviolent males ( N = 34 ).</td>
<td>Compared with both nonviolent samples, maritally violent men scored higher on T-anger and AX-Out scales and lower on the Anger Control scale of STAXI.</td>
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<td>Dalton, Blain, &amp; Beizer (1998)</td>
<td>STAXI</td>
<td>Male ( N = 137 ) sexual offenders.</td>
<td>With the exception of the State-Anger score, male sex offenders had similar STAXI scores as normal men.</td>
</tr>
<tr>
<td>Granic &amp; Buttler (1998)</td>
<td>STAXI, Criminal Sentiment Scale (CSS; Andrews, Wormith, &amp; Kiessling, 1985)</td>
<td>Adolescent offenders in psychiatric hospital ( N = 42 ); aggressive/versatile ( n = 22 ); 16 males &amp; 6 females) and nonaggressive ( n = 22 ); 18 males &amp; 4 females( s ).</td>
<td>Modest associations between STAXI anger and CSS antisocial beliefs scores. Aggressive/versatile adolescents had higher STAXI anger scores and higher CSS antisocial beliefs scores than the nonaggressive ones.</td>
</tr>
</tbody>
</table>
Mills, Kroner, & Forth (1998)  
NAS-1994, STAXI, AQ, Multiple Anger inventory (MAI-R; Siegel, 1986)  
Male prisoners [N = 204; General admissions (GAs, N = 102) & Violent admissions (VAs, N = 102)]  
VAs report generally lower NAS anger scores than GAs. Lower NAS scores for both at retest. Appropriate scale-subscale correlations and reliability of NAS. Good concurrent validity of NAS, assessed as scale correlations with STAXI, AQ, and MAI-R.

Novaco & Renwick (1998)  
NAS-1994, STAXI  
Male, incarcerated psychiatric patients (N = 125)  
Good predictive validity of NAS and STAXI; high-scoring patients were more likely to be involved in future assaults, and were more likely to remain in the hospital 30 months after the test period.

Jones, Thomas-Peter, & Trout (1999)  
NAS-1994  
Clinical sample of outpatient anger management participants (N = 58) and nonclinical controls (N = 212)  
Good internal consistency and good capacity of NAS to discriminate between the clinical and nonclinical samples. Higher NAS scores in the clinical sample.

Grisso, Davis, Vesselinov, Appelbaum, & Monahan (2000)  
NAS-1994, Schedule of Imagined Violence (SIV; Grisso, Davis, Vesselinov, Appelbaum, & Monahan, 2000), Barrat Impulsiveness Scale (BIS-11, Barrath, 1994), Psychopathy Checklist Screening version (PCL-SV; Hart, Hare, & Forth, 1994)  
Male and female patients (N = 1,136) and Community non-patients (N = 519) hospitalized with mental disorders  
Patients with violent day dreams and thoughts about hurting other people [i.e., (SIV+)] had significantly higher mean scores on the NAS Cognitive, Arousal and Behavior scales, compared with nonviolent (SIV-) ones. (SIV+) patients also scored higher on psychopathy (PCL-SV) and impulsivity (BIS-11) compared with (SIV-) patients. The results were similar for both sexes. The patient sample had more (SIV+) persons than the Community nonpatient sample.

Swaffer & Hollin (2001)  
NAS-1994, STAXI, General Health Questionnaire (GHQ-28; Goldberg & Hillier, 1979)  
Incarcerated young offenders (N = 100)  
Compared with normative data, incarcerated young offenders report higher levels of anger and lower levels of control. Significant correlations were found between the anger scales of NAS and STAXI and the GHQ-28 components Somatic symptoms, Anxiety and Insomnia, Social dysfunction, and Severe depression.

Hudson, Wales, Bakker, & Ward (2002)  
STAXI  
Reoffending (N = 19) and non-reoffending (N = 200) sexual child molesters  
Compared with non-reoffenders, reoffending sexual child molesters were more likely to offend against unknown victims of male, or, both genders as victims. They also had higher scores on the T-anger and AX-In scales of STAXI.

Novaco & Chemtob (2002)  
NAS-1994, AX-In, AX-Out AX/CON scales of STAXI, Combat Exposure Scale (CES; Lund, Foy, Sipprell, & Strachan, 1984), Mississippi Scale for PTSD (Keane, Caddell, & Taylor, 1988)  
Vietnam combat veterans with PTSD, Post Traumatic Stress Disorder (N = 143)  
In addition to the associations with age, education, and combat exposure (i.e., CES scores), the NAS Arousal, AX-In, and AX/CON scales together accounted for over 40% of the variation in the Mississippi Scale for PTSD. Results support anger as a feature of combat-related PTSD.
Suter, Byrne, Byrne, Howells, & Day (2002)  
NAS-1994, STAXI  
Male (N = 121) and female (N = 50) prison inmates  
Found significant differences regarding the experience and expression of anger, assessed by STAXI and NAS-1994. Significant main effects for gender in a majority of STAXI and NAS subscales. Except for the STAXI anger-control scale, female prisoners scored higher on all STAXI subscales and scales, and also on the Cognitive, Arousal, and Behavior scales of NAS.

NAS-1994, Gudjonsson Blame Attribution scale (BAI; Gudjonsson & Singh, 1989), Eysenck Personality Inventory (EPQ; Eysenck & Eysenck, 1975)  
Male prisoners [N = 66, violent (n = 33) and nonviolent (n = 36)]  
Violent and nonviolent offenders did not differ regarding their scores of the Cognitive, Arousal, and Behavioral scales of NAS. Violent offenders scored higher on guilt and blame attribution (BAI) and psychoticism (EPQ). No relationship was found between anger and blame attribution. The Lie, Psychoticism, and Neuroticism scales of EPQ, and recidivism explained 56% of the variation in NAS anger scores.

Novaco & Taylor (2004)  
Mentally disabled, male offenders (N = 129) in forensic care  
Measure-specific result: the NAS Total score was associated with offensive behavior in hospital; the STAXI scores were not. The NAS Total score predicted offensive behavior after controlling for age, personality variables, violence history, and length of stay in hospital.

del Bairro, Aluja, & Spielberger (2004)  
STAXI-CA, APV Verbal and Physical Aggressiveness (Caprara & Pastorelli, 1993), BAS-3 Socialization battery (Silva & Martorell, 1989), Big Five Questionnaire (BFO; Caprara, Barbaranelli, Borgogni, & Perugini, 1993), EPQ, SSS-Junior (Eysenck, & Eysenck, 1978)  
Urban community sample of children [(N = 2.191), boys (n = 1.251), girls (n = 940)]  
Validation of the Spanish (Catalan) adaptation of STAXI: appropriate factor structure and intrascale correlations. STAXI scales correlate in a highly discriminative manner with scales of aggression, personality, and sensation seeking. The highest correlations are: T-Anger scale with APV (.50), EPQ Neuroticism (.39), and BFO Emotional stability (.37) scales; AX-Out scale with APV (.46) and SSS-J Disinhibition (.34) scales; AX-In scale with BAS-3 Social withdrawal (.29) and EPQ-J Neuroticism (.27) scales.

Dahlen, Martin, Ragan, & Kuhlman (2004)  
STAXI-2, BIS-11, AQ Boredom Proneness scale (BPS; Farmer & Sundberg, 1986), Arnett Inventory of Sensation Seeking (AISS; Arnett, 1994)  
University students (N = 224) categorized as high versus low in their propensity to experience boredom (HBs and LBs)  
HBs scored higher than LBs on anger and aggression. Boredom Proneness Total score was positively correlated with anger and aggression, and negatively with STAXI-2 Control. When controlling for gender and age, boredom proneness due to inadequate external stimulation predicted all AQ and STAXI scales. Impulsiveness and sensation seeking were less predictive of anger and aggression. Boredom proneness due to inadequate internal stimulation had no predictive capacity.
Anger and associated phenomena

The connotation of anger with a number of pathological phenomena has been argued previously (see Anger: The focus concept of this thesis subsection). In the next subsection, the parallels of anger with aggression, certain personality traits, violent crimes, mental disorders and psychopathy are touched upon. Prior to the presentation of the multiple aims of this thesis, the subsection ends with a short presentation of the population in which these parallels are frequently highlighted by research studies: Swedish prison inmates.

Anger and aggression

Aggression represents only a certain percentage of anger-out strategies, and thus, the relationship between anger and aggression is neither simple nor straightforward (Eckhardt & Deffenbacher, 1995; Kassinove & Sukhodolsky, 1995; Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al. 1995). Nevertheless, the mainstream, conventional view holds that unbridled anger is more or less the source of aggressive behavior. Some theorists are cautious in the formulation of this relation, and thus, argue a relatively loose relationship between anger and aggression (Averill, 1983; Kassinove & Sukhodolsky). Berkowitz (1989) states that anger is a perceptual experience that does not cause aggression, but merely accompanies the inclination to act aggressively. Novaco (1994) holds that anger is an inherent disposition to react aggressively and, thus, it may be regarded as a causal determinant “neither necessary or sufficient” (p. 32) for aggressive behavior to occur. In line with Konecni (1975), and Novaco, Novaco (2000) argue for a reciprocal (i.e., bidirectional) relationship, in which aggressive behavior may by itself induce feelings of anger as well as dissipate them in a cathartic manner. More specifically, the higher and more intense the arousal experienced, the greater the risk for aggression to occur. Intense anger not only strengthens an individual’s motivation to act out aggressively but also distorts his or her ability to process aggression-mitigating information. The aroused person is not an objective observer.

Impulsive versus premeditated aggression

Anger may be related to aggression in subtle ways (Novaco, 1986). On the basis of the presence or absence of an agitated, aroused state (anger), the concept of aggression has been categorized as either impulsive (i.e., emotionally charged, reactive) or premeditated (i.e., planned, instrumental, and thus, not fuelled by anger) (Barrat & Slaughter, 1998; Berkowitz & Harmon-Jones, 2004). Novaco maintains that anger may be involved in both kinds of aggression. The case of impulsive aggression is straightforward: the immediate, unbridled anger overrides all alternative mental processes. In the case of premeditated aggression, anger may operate through the process of cognitive rumination, which means an exaggerated mental preoccupation with or dwelling on provocations and provoking categories (e.g., people, occurrences, or whatever one is agitated about). Thus, according to Novaco, the process of cognitive rumination represents a prolonged anger and hostility which may fuel violent actions just as much as the intensely aroused, agitated form of anger does.
The system oriented approach of aggression

It may be the case that the occurrence of aggression is influenced by multiple, dynamically interacting factors, one of which is anger. According to the systems-oriented approach of Shani and Novaco (1999), aggression is embedded in an interdependent network of personal, contextual, and structural layers. Within these multiple layers, the occurrence of aggression is determined by the balance of the internal versus external, inhibitory (aggression preventing) versus disinhibitory (aggression promoting) conditions. Internal inhibitory conditions (e.g., empathy, self-efficacy, and socialization), and external inhibitory ones (e.g., the presence of control agents and risks of punishment), lower the risk of aggressive behaviors. By the same token, exaggerated anger responsiveness with low thresholds, biased perceptive and cognitive functioning, strong physiological arousal, and inappropriate regulatory function are individual disinhibitory conditions that may distort an angry person's ability to make nonaggressive choices. Individual dispositions may form more severe, enduring, trait characteristics and mental disorders, which significantly impair a person's long-term social and occupational functioning. In addition, aggression is an primordial method of achieving one’s goals, and it may be externally promoted by positive reinforcement. On the situational level of analysis we may note that chemical substances (e.g., alcohol and drugs), aggressive models, low social control, and low risk of punishment act as disinhibitory agents. Aggression may occur when the inhibitory conditions become overridden or neutralized by the disinhibitory ones. The approach of Shani and Novaco shows a considerable similarity with the multidimensional focus of the Person Oriented Approach, as formulated by Magnusson (1985) and Bergman and Magnusson (1997).

Anger and personality traits

Emotions and emotional style have been recognized as building blocks of a person’s stable and consistent pattern of personality, which disposes him or her to think, feel, and behave in a particular way. More to the point, personality may be regarded as a collective term for individually unique, emotional, cognitive, motivational and behavioral characteristics (Spielberger, Ritterband et al., 1995; Tremblay & LeMarquand, 2001). Spielberger, Ritterband, et al. argue that “…emotions are the critical vital signs of psychological health and well-being, and that measuring the intensity, duration, and frequency of emotional reactions must be an essential practical consideration in the clinical assessment of personality” (p. 42).

On one hand, personality characteristics are, at least to some extent, rooted in heredity. Emotions appear early in life and imply great individuality in temperament, irritability, and emotional reactivity of newborn babies. Anger and negative emotional expressions have been observed in infants as young as two to three months (Lewis, 1993; Tremblay & LeMarquand, 2001). According to Tremblay & LeMarquand, temper tantrums peak around the age of two to three, and begin to diminish thereafter, unless the child learns to control others through such behavior. Thus, personality characteristics may also be regarded as being formed by the rules of environmental, social interplay. All things considered, anger usually works; having one’s way successfully won may reinforce one’s subsequent preferences for these tactics.
Emotions and the expression of emotions are acquired through the laws of social learning (Salzinger, 1995), or socialization (Averill, 1982). Social information processing models argue for defective cognitive and emotional coding of social encounters in aggressive children: they make more impulsive and hostile attributions of others than their nonaggressive peers (Dodge & Somberg, 1987). Based on a longitudinal study of preschool children three to four years old ($N = 127$), Denham et al. (2002) attributed current as well as subsequent aggressive behavioral expressions and lack of social competence to a deficit of emotional knowledge, and thus to a poor ability of processing, recognizing, and remembering emotional content in oneself and others.

Personality characteristics are relatively stable through an individual’s life span. In a 17-year long follow-up study of a random sample of Finnish children ($N = 1,319$), Pesonen, Räikkönen, Keskivaara, and Keltikangas-Järvinen (2003) reported the relative stability of difficult temperament (i.e., high emotionality/anger, high activity, and low sociability) between childhood and adult age. In particular, maternal perceptions of their daughters’ and sons’ low social cooperation (manifested as social maladjustment), and their sons’ high activity (manifested as acting-out), were closely associated to the self-reported anger of these children as adults. Regarding this stability of temperament, the authors discussed the roles of biological factors and the environmental factor of cumulative continuity, which means that negative parental reactions reinforce early difficulties, and thus, contribute to their continuity. Muris, Meesters, Morren, and Moorman (2004) argue for the capacity of attachment and parenting style to predict adolescents’ ($N = 441$) anger and hostility (assessed by AQ and the Trait Anger scale of STAXI). Avoidantly and ambivalently attached adolescents scored higher on the anger and hostility scales than did those securely attached. Adolescents’ experiences of parental rejection and inconsistency correlated highly (in the range of .22 to .48) with the anger and hostility scales (Muris et al.).

Some studies have related anger and aggression to anxiety (Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995). According to Novaco (1995, p. 81) “Being out of control is inherently anxiety arousing. Paradoxically, an anger outburst emitted as an effort to establish control easily puts one in a mode of dyscontrol.” According to clinical observations (Spielberger, 1999), persons who frequently suppress angry feelings score high on the Neuroticism scale of EPQ (Eysenck & Eysenck, 1975) and the Trait Anxiety scale of the State-Trait Personality Inventory (STPI; Spielberger, 1979). Consistent with Spielberger’s emphasis, Mills et al. (1998) argued that there is a positive relationship between anger and anxiety in prisoners. More specifically, they reported a lower level of anger in the fourth than in the first week of incarceration, explaining the reduction of anger as a possible consequence of the diminished level of anxiety when the prisoners have become accustomed to the prison milieu (Mills et al.). By means of multivariate analysis of variance (MANOVA), Wood and Newton (2003) showed that 56% of the variation in the NAS (Novaco, 1994) anger scores of prisoners could be explained by their scores on the Neuroticism, Psychoticism, and Lie scale of EPQ, and by their tendency to reoffend. Stanford, Houston, Villemarette-Pittman, and Greve (2003) indicated a substantial personality pathology, emotional instability, and responsiveness to behavioral expressions of physical harm in a group of premeditated aggressors. More specifically,
they reported that this group scored higher than nonaggressive controls on the anger and hostility scales of AQ (Buss & Perry, 1992), and also on the impulsivity, psychoticism, and neuroticism scales of EPQ.

Anger has been reported to be negatively associated with social desirability; persons with socially conforming attitudes may have a tendency to underreport anger (Averill, 1983; Kuppens, 2005). According to Novaco (2003, p. 2), “admitting to the experience of anger has a perceived negative pay-off. Anger can be easily equated by the respondent with being out of control or being a bad person.” Regarding a university student sample ($N = 360$) with the average age of 18.7 years, Kuppens reported a moderately negative association between anger proneness, as measured by the Dutch version of the Trait Anger scale (Van der Ploeg, Defares, & Spielberger, 1982) and the Social Desirability scale of the Swedish universities Scales of Personality (SSP; Gustavsson et al., 2000). Manifestations of social desirability have been reported for the State-Trait Anger Expression Inventory, STAXI (Håseth, 1996).

Finally, connections of anger with distrusting, hostile, and antisocial cognitive styles have been suggested. Ford (1991) reported a significant relationship between the Trait- Anger and Anxiety scales of State-Trait Personality Inventory (STPI; Spielberger, 1979) and irrational beliefs in adult, violent prison inmates, and advocated the treatment of these cognitive distortions. Similarly, Granic and Butler (1998) found that aggressive/versatile young offenders experienced chronic anger more often, and also endorsed more antisocial beliefs. Copello and Tata (1990) reported significantly higher tendencies of distorted, threatening interpretations of ambiguous sentences (i.e., interpretative bias) in violent and nonviolent offenders in comparison with nonoffenders. Kuppens (2005) found a moderate positive relationship in a university student sample ($N = 360$), between anger proneness and the tendency towards suspicion and distrust of other people’s motives (the Distrust scale of SSP; Gustavsson et al., 2000).

**Anger and violent crime**

Ever since ancient times, art and literature have depicted endless variations on the theme: more or less justified anger, ire, wrath, fury, and rage, felt by humans and divine creatures, give rise to and motivate violent acts of rape, battery, homicide, murder, and warfare. Humans seem to be a violent species by nature, and, in fact, much of what we know as culture, religion, geography, and politics is formed by and maintained through violence, or the threat of violence. Novaco (1986) argues that “Clearly, hundreds of studies in experimental psychology have found that when subjects are made angry or annoyed there is an increased probability of aggression. This conspicuously extends to assaultive criminal behavior” (p. 32). By definition, violence may be regarded as a subtype of aggression, “generally used to denote extreme forms of aggression such as murder, rape, and assault” (Anderson, 2000, p. 163).

Consistent with the discussion on anger and aggression above, the link between anger and violence is neither simple nor straightforward (Novaco, 1986, 2000; Novaco et al., 2001). Although anger is not necessarily involved in violent crimes, a great deal of research has highlighted anger as a personal, dispositional risk factor for violence (Howells et al., 2002; Novaco, 1997; Novaco et al., 2001; Steadman et al., 1994).
Polaschek and Reynolds (2001) argue that “Some violent offenders find anger very satisfying, and may deliberately expose themselves to situations and cues that will arouse them. Such individuals may have pathways to violence in which by getting angry they are then justified in acting violently. In this sense, exposure to reliably provoking cues can be seen as a form of covert planning on the offender’s part” (p. 419).

The prevalence of problematic, strong, or poorly controlled anger has been emphasized regarding various clinical categories, namely, prison inmates (Kroner & Reddon, 1995; Swaffer & Hollin, 2001; Wood & Newton, 2003); incarcerated juvenile offenders (Cornell, Peterson, & Richards, 1999; Granic & Butler, 1998); offender adolescents within the Youth Treatment Service (Swaffer & Epps, 1999); court-ordered participants in anger-management therapeutic sections (Foley, Hartman, Dunn, Smith, & Goldberg, 2002); and elderly inpatients in specialist service for mental health problems (Taylor, DuQueno, & Novaco, 2004). Dysregulated anger also has been found in forensic hospital inpatients (Novaco & Renwick, 1998; Novaco & Taylor, 2004) and aggressive psychiatric outpatients (Stanford et al., 2003). The association between anger and violence may be embedded in a criminal subculture; offending behaviors are learned and reinforced through the social interaction among delinquent peers, within intimate, personal groups (Sutherland, 1996).

It is often argued that problematic anger, vindictiveness, and hostile fantasies are more or less fixed dispositions of the rapist (Barbaree & Serin, 1993; Groth, 1979; Malamuth, 1998; Scully & Marolla, 1996). Rapists attack their victims for a variety of reasons, motivated by power, anger, and sexual urge. According to Groth (1979) rape is misconstrued by the legal definition as sexual crime. Whereas rape serves primarily nonsexual needs, it would be more properly understood as an act of violence. Pithers (1993) indicated the limited emotional awareness of rapists, in that rapists, compared with other categories of perpetrators (e.g., child abusers), reported fewer names of experienced emotions. Among the reported emotions by rapists, various types of anger (i.e., rage, fury) clearly dominated.

The role of anger is also emphasized in homicide and manslaughter (Eckhardt & Deffenbacher, 1995; Swaffer & Epps, 1999). According to Novaco (1986), “murder and aggravated assault often occur as calculated acts intended to satisfy anger that has fomented over some time interval” (p. 33). Tsytisarev and Grodnitzy (1995) argue that the anger and the subsequent aggressive outburst may develop into an addictive process of need satisfaction in serial killers. The intense rage, followed by one or several brutal offenses, may lead to the reduction of tension and a period of relief (Tsytisarev & Grodnitzy).

The relationship of anger with interpersonal violence has been suggested in community samples of generally and domestically violent men (Barbour et al., 1998; Maiuro, Cahn, Vitalino, Wagner, & Zegree, 1988; Stith, Smith, Penn, Ward, & Tritt 2004). According to Siegler (1989), 40% of all female homicide victims in the United States are murdered by their husbands. With the objective of identifying risk factors of victimization in intimate partner relationships, Stith et al. performed a meta-analytic review of 85 studies. These reported moderate effect sizes between men’s physical abuse of their partners and ontogenetic risk factors, namely, traditional sex-role ideology, anger/hostility, alcohol use, depression, current stress situation, and history
of partner abuse. The effect sizes in the eleven investigated anger studies ranged from .16 to .45 in this meta-analysis. As a point of interest, the high rate of violence committed by men toward wives/girlfriends has been debated in Sweden recently. In a televised debate, women from the Swedish academic and media worlds revealed their own experiences of physical and psychological abuse in the family (Marklund, 2004).

**Anger and mental disorders**

Psychiatric diagnoses are medico-legal criteria, on the basis of which an offender may or may not be convicted to forensic psychiatric treatment instead of prison. For the definitions of mental disorders, clinicians and researchers rely on any of the two existing psychiatric diagnostic systems, namely the *International Classification of Diseases-10, ICD-10* (World Health Organization, 1992) and the *Diagnostic and Statistical Manual of Mental Disorders, DSM* (American Psychiatric Association, 1994). The fourth edition of DSM, DSM-IV, includes a multiaxial classification system which takes into account a person’s mental disorders on Axis I (Major mental disorders), Axis II (Personality and developmental disorders), Axis III (relevant physical status), Axis IV (Life stressors and psychosocial problems in the recent past) and finally, Axis V (Global assessment of current and recent, adaptive functioning). Axis I, major mental disorders, includes schizophrenia, major depression, bipolar disorder, delusional disorder, and atypical psychoses. Axis II, personality disorders, indicates the prevalence of pathological deviations in form of enduring dispositions or trait characteristics that significantly impair a person’s long-term social and occupational functioning. According to Hodgins (2001), persons with major mental disorders are more likely to be convicted of criminal offences.

Intense, poorly regulated anger and aggressive behavior often co-occur as symptoms in neuropsychiatric impairments and mental disorders. This has been emphasized regarding developmental disability as defined by the Mental Health Act 1988 (Novaco & Taylor, 2004), suicidal risks (Kotler et al., 1993), attention deficit hyperactivity disorder (ADHD) (Stevenson, Whitmont, Bornholt, Livesey, & Stevenson, 2002), combat related post traumatic stress disorder (PTSD) (Eckhardt & Deffenbacher, 1995; Novaco & Chemtob, 2002), paranoid schizophrenia, and affective and mood disorders (Novaco, 1986; 2000). Eckhardt and Deffenbacher argue that anger and the lack of capacity to resist aggressive impulses are involved in intermittent explosive disorder (IED), in particular. Suppressed anger or “anger turned inward” may have a vital relevance in the case of depressive disorders and dysthymia (Eckhardt & Deffenbacher; Spielberger, Krassner, & Solomon, 1988). Eckhardt and Deffenbacher also related anger as a symptom to high blood pressure and coronary artery disease, CAD (on Axis III).

Varying patterns of anger and aggressive acting-out are also related to the Axis II antisocial (APD), paranoid, and borderline (BPD) personality disorders (Diamond, 2003; Eckhardt & Deffenbacher, 1995; Jones & Hollin, 2004; Novaco, 1986, 2003; Wang & Diamond, 1999). Obviously, the varying personality disorders involve various forms of anger. The antisocial personality is linked to a history of criminality from childhood through adolescence, in which aggressive behavior is one element in a larger pattern of fighting, lying, truancy, and substance abuse (American Psychiatric Association, 1994). In a male, psychiatric offender sample (N = 385) with high
prevalence of diagnoses of APD (43%) and BPD (18%), Wang and Diamond reported that impulsiveness (BIS-11; Barrat, 1994), anger (AQ Anger; Buss & Perry, 1992) and antisocial personality style, as assessed by the Personality Assessment Inventory (PAI; Morey, 1991), were related to frequent institutional aggression. In a structural equation model (SEM), anger, impulsiveness, and antisocial personality style were strongly interrelated (path coefficients in the range from .60 to .67). According to Wang and Diamond, anger had the strongest path coefficients to verbal (.84) and physical aggression (.67). The antisocial personality disorder is often comorbid with, and thus co-exists and interacts with, other personality disorders, such as the paranoid, schizoid, borderline, histrionic, narcissistic, avoidant, dependent, and passive-aggressive personality disorders (Widiger & Corbit, 1997).

The paranoid personality harbors exaggerated mistrust, hypersensitivity, and expectations of being badly treated by others (American Psychiatric Association, 1994). As the paranoid disorder does not include systematized delusions or hallucinations, its anger component can be interpreted as a long-term functioning mode of personality (Novaco, 1986). The borderline personality is characterized by unstable, fluctuating mood, inappropriate, intense anger experiences, and frequent anger expressions which the person has very limited capacity to control. Persons with this disorder have serious problems with interpersonal relationships, and become easily irritated, critical, disappointed, and revengeful (American Psychiatric Association, 1994).

In the current diagnostic systems there is no room for specific anger disorders. DSM-IV includes diagnostic categories for situational anxiety (i.e., phobias) but not for situational anger. Although anger is often included as a part of some other primary diagnostic criterion in the different Axis I or Axis II disorders, there is no diagnostic category in which anger is the primary criterion. None of the DSM-IV diagnoses can account for patients whose primary clinical problem is the lack of anger control (Eckhardt & Deffenbacher, 1995; Eckhardt et al., 2004; Novaco, 1986).

**Anger and psychopathy (PCL-R)**

Varying patterns of anger and aggressive acting-out are related to psychopathy, defined as having high scores on the Psychopathy Checklist-Revised (PCL-R; Hare, 2003). The concept of psychopathy includes a coherent pattern of affective and interpersonal characteristics, such as egocentricity, superficial charm, lack of guilt and anxiety, inability to learn from punishment, impoverished emotions, and inability to form lasting emotional ties. PCL-R includes 20 items, the conceptual focuses of which incorporate both personality and behavior. Hare recommends a cut-off point of 30 and higher as classifying a person as a psychopath. Offenders with high scores on PCL-R have been ascribed high violent recidivism (Hart, Kropp, & Hare, 1988; Grann, Långström, Tengström, & Kullgren, 1999; Tengström, Grann, Långström, & Kullgren, 2000) and the frequent use of cold-blooded, instrumental violence (Serin, 1991; Serin & Kuriychuk, 1994). According to Serin, high-scoring offenders reported more intense situational anger as well as greater attribution of hostile intent to anger-evoking situations. Serin and Kuriychuk argued for the “synergistic” (p. 432) coexistence of hostile attribution and impulsivity (behavioral disinhibition) in high-scoring offenders. Hostile, violent thoughts may be part of the process of cognitive rumination; research
has indicated the relevance of hostile fantasies about hurting others in sexually offending psychopaths (Malamuth, 1998) and adolescent delinquents (Silver, 1996). Self-reports of violent thoughts in hospitalized mentally disordered patients were related to high scale scores of psychopathy (PCL-SV; Hart, Hare, & Forth, 1994), anger (NAS; Novaco, 1994), and impulsiveness (Barratt, 1994; Grisso, Davis, Vesselino, Appelbaum, & Monahan, 2000).

Prisoners in Sweden

Given that crime is a rising concern in Swedish society, there is a large body of research that has aimed at clarifying the level of mental impairment in the male offender population in Sweden. Studies have frequently reported a high prevalence of neuropsychiatric impairments, for example, dyslexia (Jensen, Lindgren, Wirsén Meurling, Ingvar, & Levander, 1999) and ADHD (Dåderman, Lindgren, & Lidberg, 2004; Dalteg, Lindgren, & Levander, 1999).

In a sample of violent male prisoners (N = 130) incarcerated for homicide, assault, robbery, and rape, Longato-Stadler, von Knorring, and Hallman (2002) reported frequent diagnoses of antisocial (39%), paranoid (29%), and borderline personality disorders (27%). Fifty-six per cent of the male prisoners in their sample had one or more comorbid diagnoses of personality disorders. Longato-Stadler et al. also reported high scores on Impulsiveness, Monotony avoidance, Somatic and Psychic anxiety, Muscular tension, Indirect aggression and Irritability, as measured by the Karolinska Scales of Personality, KSP, (Schalling, 1986).

The prevalence of psychopathy (PCL-R; Hare, 2003) has recently been reported to be 28.9% in male prison inmates (N = 293) in the nation-wide assessment unit of Kumla prison (Johansson, Andershed, Kerr, & Levander, 2002).

As a part of the Swedish judicial system, the Prison and Probation Service strives to implement the objectives of Swedish criminal policy, which is to reduce criminality and increase safety in society. With the task of implementing prison sentences, the Prison and Probation Service operates 54 prisons; 40 of them are so-called closed prisons with varying security levels (Prison and Probation Service, 2005). Imprisonment is a punishment per se, in that it involves deprivation of basic freedoms, and forces strict routines upon many restless, impulsive, and poorly stimulated inmates who are lumped together in a restricted area. The punitive character of imprisonment may also be argued on the basis of Merton’s (1957) typology, according to which criminal offenders are innovative people with an active, impulsive, and limitation-avoiding lifestyle. Given their population with high levels of psychopathology, the Swedish prisons may be regarded as dynamic and tough milieus in which dramatic, violent, and often unforeseen events have an increased probability of occurring. Overwhelming problems of prison riots (Nyhetsmorgon, TV4, 2002, July 12), armed violence (Prison and Probation Service, 2004, July 28), hostage taking (Prison and Probation Service, 2004, September, 24; 2004, December 30), and breaks (Prison and Probation Service, 2004, January 19; 2004, September 24) have occurred lately in the Swedish penal system.

In Swedish prisons, the average prisoner is a 36-year-old male, most frequently a re-offender. He is often improperly educated and may, if motivated, participate in
courses that improve his basic skills (e.g., reading, writing, and arithmetic), or teach him a trade. In order to promote the prisoners’ readjustment to society, the prisons have established various programs related to alcohol, narcotics, violence and sexual offence, with the objective of preventing continued substance abuse or recidivism (Prison and Probation Service, 2005). According to the latest statistics (Prison and Probation Service, 2004, December 17), the number of new intakes with drug problems has increased to 6,400, which is 2,000 more than in 2003.

Since September 2000, Aggression Replacement Training (ART; Goldstein, Glick, & Gibbs, 1998) has been included among the available therapeutic programs and has targeted poor anger management and the lack of cognitive and social skills in 360 prison inmates at 14 prisons. As yet, the results of the ART intervention program have not been evaluated (I. Nilsson, personal communication, July 3, 2004).

Although anger is an important antecedent of aggressive behavior and a vital correlate of clinical disorders, the systematic assessment of this emotion has not yet been given high priority in Swedish prisons. The lack of psychometric, anger assessment instruments may be an important aspect behind this unfortunate circumstance.

**Aims of the work described in this thesis**

The principal aim of this thesis was to develop Swedish adaptations of the Novaco Anger Scale, version 1998, Provocation Inventory, and the State-Trait Anger Expression Inventory-2. Because of the lack of aggression instruments in Sweden (R. Schüller, personal communication, February 8, 2001), the authors of the included studies also undertook the adaptation of the Aggression Questionnaire (AQ; Buss & Perry, 1992). The adapted assessment instruments were called *NAS-1998-S*, *PI-S*, *STAXI-2-S*, and *AQ-S*, respectively (Lindqvist, Dåderman, & Hellström, 2003; 2004). The originals of the adapted assessment instruments NAS-1998-S, PI-S, STAXI-2-S, and AQ-S have been deemed to have excellent psychometric qualities (Eckhardt et al., 2004) or The psychometric qualities of the originals of the adapted assessment NAS-1998-S, PI-S, STAXI-2-S, and AQ-S have been deemed excellent.

The adaptations were administered in a male, violent prisoner sample (Lindqvist et al., 2004) and a male, nonviolent university student sample (Lindqvist et al., 2003). The various psychometric properties of NAS-1998-S, PI-S, and STAXI-2-S were investigated in the university student sample (Studies I and III) and the violent prisoner sample (Studies II and III), respectively.

The two samples of this thesis were selected to represent different levels of aggressiveness. The university students were invited to participate in the studies of this thesis by an introductory letter that included the base requirement of not having been convicted of violent crimes. Thus the sample of university students represented low levels of aggressive tendency, as those who had been convicted of violent crimes were disqualified. By the same token, the violent prisoners were regarded as having high levels of aggressive tendencies. Most importantly, the samples differed from each other regarding their levels of aggression, and, based on previous research on the relationship of anger to criminal aggression (see the *Introduction* section), they were also hypothesized to differ on their reported levels of anger.
The aim of Study I was to develop NAS-1998-S, PI-S, and STAXI-2-S and to investigate factor structures, relationships between scales, reliability (internal consistency, homogeneity, and coefficient theta), and construct validity of the adapted NAS-1998-S, PI-S, and STAXI-2-S in the sample of male nonviolent university students \( (N = 100) \). Based on factor analysis studies of NAS-1990, we hypothesized a four-factor solution for the NAS-1998-S, where the first three factors indicated those identified by previous studies using part A of NAS-1990, and the fourth factor was expected to correspond to the Regulation scale, first introduced in NAS-1998. Regarding PI-S we predicted that exploratory factor analysis (EFA) of the five content categories would reveal a single, underlying factor, reflecting a unitary dimension, corresponding to PI-Total. Regarding STAXI-2-S, we predicted a three-factor solution, with separate dimensions corresponding to the experience, expression, and control of anger. Study I also included a fourth EFA, the aim of which was to focus on construct validity, and thus, to investigate whether the scales of similar anger dimensions within NAS-1998-S, PI-S, and STAXI-2-S group together.

The aim of Study II was to investigate the internal reliability (i.e., internal consistency and scale homogeneity) and construct validity of NAS-1998-S in the sample of violent male inmates \( (N = 95) \). Further aims were to investigate intrascale relationships, to calculate the Inconsistent Responding Index, INC, of NAS-1998-S, and also to analyze possible relationships of NAS-1998-S scores with demographic characteristics and criminality records. In this study, the concept of construct validity was operationalized in terms of strong relationships with scales that assess similar constructs, and weaker relationships with scales that have distinct conceptual focuses. Measures of constructs similar to NAS-1998-S were represented by the anger and aggression scales of PI-S, STAXI-2-S, AQ-S, and the scales of the Aggression factor of the Swedish universities Scales of Personality (SSP). Measures of constructs distinct from NAS-1998-S were the scales of the Extraversion factor of SSP.

In line with Novaco (1994, 2003) and Mills et al. (1998) we expected high to moderate, positive correlations (1) between the NAS-1998-S Total score and general measures of anger and aggressiveness; (2) between the NAS-1998-S Cognitive scale and measures of hostility, thought disorder and anger; (3) between the NAS-1998-S Arousal scale and measures of internalized anger; (4) between the NAS-1998-S Behavior scale and measures of expressed, verbal and physical aggression; (5) between the NAS-1998-S Regulation scale and concurrent anger control scales. We also expected (6) substantial negative correlations between the NAS-1998-S Regulation scale and all measures of anger expression. Furthermore, we expected (7) substantially lower correlations between the scales of NAS-1998-S and the scales of the Extraversion factor of SSP.

The aim of Study III was to compare the level of anger assessed by the Novaco Anger Scale-1998-S (NAS-1998-S), the Provocation Inventory-S (PI-S), and the State-Trait Anger Expression Inventory-2-S (STAXI-2-S) in violent male prisoners \( (N = 95) \) and nonviolent male university students \( (N = 100) \). Another aim was to investigate the mean scale scores of the Swedish samples in relation to American standardization samples on NAS-1998, PI (Novaco, 2003), and STAXI-2 (Spielberger, 1999). A further goal was to evaluate the capacity of the anger instruments to correctly predict the group membership of the violent prisoner and university student participants. In
line with the results of previous studies on offender samples, the violent prisoners of this study were hypothesized to harbor higher levels of anger and lower levels of control than both university students in Sweden and standardization participants in America (Hypothesis 1). The capacity of the anger scales to predict the group membership of the participants was expected to be good (Hypothesis 2).

METHODS

In the Methods section, the participants of the prisoner and university student samples are described first. Subsequently to the descriptions of the university student (studies I and III), and prisoner participants (studies II and III), the section continues with descriptions of the procedure of the adaptation of the anger and aggression scales, namely, NAS-1998-S, PI-S, STAXI-2-S, and AQ-S. Subsequently, the data collection procedure and issues of ethics are touched upon. Next, the administered anger, aggression and personality assessment instruments are presented. The last subsection summarizes issues of data treatment and describes the statistical analyses.

Participants

University student participants (Studies I and III)

The university student sample consisted of undergraduate male students \((N = 100)\) who were drawn from an initial list of 139 male students. The Student Bureau of Stockholm University randomly selected the list of names from a subpopulation of 7,000 students (i.e., both males and females who were registered for their first and second semesters in various academic faculties at Stockholm University, during the autumn semester of 2001). The whole population of students at Stockholm University \((N = \text{about } 33,000)\) was not accessible for the purpose of the study (M. Wickberg, personal communication, September 27, 2001).

The male university student participants ranged in age from 19 to 75 years \((M = 33.2, SD = 12.5)\). Ten of them had an immigrant background, that is, either the participant or one of his parents was born in different parts of the world: Northern Europe \((n = 4)\), South and East Europe \((n = 2)\), the Middle East and Africa \((n = 3)\), and South Asia \((n = 1)\). According to self-report data, none of the university student participants had ever been convicted for a violent crime (see below).

University students declining participation or excluded

From the initial list of 139 university students, thirty-nine did not become members of the university student sample. The majority of them \((n = 36)\) refused to participate. Further, three students were excluded as they had been previously convicted for violent criminal actions, according to their statements. For the refusal group, information about the reason for refusal was available. The largest group \((n = 17)\) reported lack of time or lack of interest as the reason for their refusal. The second largest group \((n = 15)\), indicated the sensitive topic of the research (i.e., anger and aggression) as the main explanation. Four persons were excluded as they failed to arrive to the test sections despite of repeated appointments. The age of the 37 dropouts
ranged from 20 to 57 years ($M = 32.4$, $SD = 9.2$). The difference in age between participants and dropouts was nonsignificant ($t = .4$, $df = 137$, $p = .73$). Thus, regarding age, the refusal to or exclusion from participation did not affect the results of the university student sample.

**Violent prisoner participants (studies II and III)**

The violent prisoner sample consisted of adult, male prisoners ($N = 95$) from the Kumla ($n = 56$), Norrtälje ($n = 24$) and Mariefred ($n = 15$) prisons, selected on the basis of their present convictions of violent crimes. Some of the violent prisoner participants had been convicted multiple crime categories, which also could include other crimes (e.g., narcotics crimes). The convictions on the basis of which the participants had been selected always included some form of violent crime. According to their statements, the participants had been convicted physical assault ($n = 35$), rape ($n = 15$), murder ($n = 41$), and kidnapping ($n = 4$). The prisoner participants ranged in age from 18 to 67 years ($M = 33.2$, $SD = 10.6$). Sixty-two men (65% of the sample) were born in Sweden and the majority of this group ($n = 43$) had native Swedish parents. The remaining 33 men had immigrated to Sweden from Africa and the Arab countries ($n = 18$), Southern Europe ($n = 6$), Northern Europe ($n = 5$), Central and South America ($n = 3$), and South East Asia ($n = 1$). Seventeen of the men were adults, (18 years or older) at the time of immigration. Forty-seven men reported high-school education; nine had university education. The remaining 39 had a completed ($n = 17$), or an uncompleted ($n = 22$) compulsory school education. Over 60 per cent of the sample were in an early phase of their prison sentence, incarcerated for two months or less. More than two thirds of the sample ($n = 67$) reported at least one previous conviction ($M = 4.2$, $SD = 5.8$); 29 men had a history of grievous criminality, defined as 5 to 15 previous convictions. Forty-nine of the 95 men had a present conviction of 5 years or more. Eleven of them had convictions of ten years or more, and 12 had life sentences. The average participant had spent a present sentence length of 5.9 years ($SD = 2.7$) ($n = 83$, life convicts excluded). In Sweden, life sentences are time-unlimited punishments, which may be converted into prison for a determinate period by pardon from the government.

All prison inmate participants gave their informed consent to participation on a voluntary basis and were able to speak and read adequate Swedish without help of an interpreter. Although the participants of this study represented varying violent crime categories, they were studied as one sample in consideration of the results of univariate analyses of variance (ANOVAs) (see Main findings section, Study II).

**Settings and populations**

Since the settings and populations of the prisons where the violent prisoner participants spent their terms may have affected the results, these aspects are touched upon next. Initially, ten prisons had been contacted, seven of which chose not to participate. The reasons for noncooperation varied; in some cases, the anger and aggressiveness inventories of this study were considered by the prison staff to interfere with, and thus jeopardize, the success of the ongoing therapeutic work with the inmates. Thus, the three high security, closed prisons of Kumla, Norrtälje, and Mariefred were chosen, on the basis of convenience, from a group of ten initially
contacted prisons. The collection of data at the Kumla prison was undertaken at a nation-wide assessment unit, where males, convicted to prison sentences of four years or longer, spend an initial, short phase of imprisonment. The Kumla population \([(N = 79)\) of which 71% \((n = 56)\) participated], stayed on average 38 days \((SD = 12.9)\) and had diagnoses of antisocial \((n = 6)\), unspecified \((n = 4)\), narcissistic \((n = 1)\), and schizoid \((n = 2)\) personality disorders (P.A. Ekblad, personal communication, September 10, 2002). The Norrtälje population consisted of 235 male prisoners, in the age range from 20 to 62 years \((M = 33.37, \, SD = 10.05)\) (L. Jansson, personal communication, November 18, 2002). At the Mariefred prison there was a population of 110 male prisoners, 50% of whom were in the ages between 18 and 25 years (T. Melander, personal communication, March 10, 2003).

Procedure

**Adaptation procedure for the anger and aggression scales**

In consideration of the lack of systematically adapted and validated anger and aggression instruments in Sweden (R. Schüller, personal communication February 8, 2001), Lindqvist et al. (2003, 2004) undertook the adaptation of NAS-1998, PI, STAXI-2, and AQ. The Swedish adaptations, named NAS-1998-S, PI-S, STAXI-2-S, and AQ-S by the authors of the studies in this thesis, were developed through the frequent co-operation of the authors with an external, bilingual back-translator, who back-translated the initial Swedish adaptations. The back-translated items were compared to the originals repeated occasions, until all items were appropriate. Whenever possible, the ambition was to translate American idiomatic expressions into corresponding Swedish ones. The adaptation of NAS-1998-S, PI-S, and STAXI-2-S benefited greatly from the frequent communication with, and support by, the authors of the original assessment instruments (for NAS-1998-S, PI-S, STAXI-2-S, and AQ-S, see Appendices A-D).

**Data collection procedure in the university student sample**

The author of the present thesis contacted each potential student participant, first by telephone and then by a detailed introduction letter. Potential participants were thoroughly informed about all aspects of their participation: voluntariness, freedom to withdraw, and debriefing. In case the person gave his informed consent to participation, and stated that he had not been convicted for violent crimes, time and place for data collection were decided. The assessment instruments were administered with their standard instructions, in a university classroom, in one session, under the supervision of the first author. In addition to completing the tests, participants were requested to note possible comments, questions, thoughts, and ideas about tests and test items, directly on the inventory forms. At the end of the test sections, discussions about the items were initiated and notes, comments, and questions carefully documented.

**Data collection procedure in the violent prison inmate sample**

The collection of data from incarcerated prisoners is a challenging task, which is regulated by legal, practical and security considerations. In prison settings, the co-
operation of participants may be reactive to the test situation, which may place particular demands on participant integrity and confidence. This is true, in particular, when the prison staff is involved in the data collection. Obviously, it is undesirable for a prisoner that the prison staff, who is in charge of his life conditions in the prison, is aware of how much anger he may feel, in particular toward the staff. Thus, his self-report of anger is likely to be distorted by a tendency to respond in a socially desirable manner.

Data collection was designed in agreement with the permissions given by the Swedish Prison and Probation Service and the administration and staff at each involved prison setting. Most importantly, as the authors had not been given the opportunity to select potential participants from the population of all convicted prison inmates (L. Krantz, personal communication, June 27, 2002), the selection of potential participants on the basis of present convictions was undertaken by the prison staff at the respective prison.

Selected participants were then invited to participate by an introductory letter, with an extensive description of the aims and methods of the research project. Afterwards, the administration and staff at each prison decided how the data would be collected. At the Norrtälje prison, the first author was allowed to meet the participants, answer their questions, and supervise the completion of the tests. The participants at the Norrtälje prison completed the instruments in one session, in a large common room. At the Kumla and Mariefred prisons, where the first author had not had the opportunity to meet the participants and supervise the completion of instruments, the data collection was undertaken by prison staff. The staff included local psychologists and researchers, who had extensive experience with test administration, and were thoroughly informed by the first author about the assessment inventories of this study. At the Kumla and Mariefred prisons, participants were encouraged to complete the instruments in solitude, in their own prison cells, without any supervision of prison staff or fellow prisoners. They also enclosed their answers in an envelope, addressed to the first author at the Department of Psychology, Stockholm University. For further feedback, the phone number, e-mail, and postal address of the first author was provided for participants during the data collection.

Ethics

All participants gave their informed consent to participation after having received detailed written and verbal information. Participants were assured that their participation was confidential and voluntary, and that they had the opportunity to withdraw at any time and level of participation. Participants were informed that no participant would gain or loose anything personally by participating in the research project. It was also emphasized that their answers were to be used for the purpose of research exclusively, in a way that guaranteed that nobody could be recognized. Regarding prisoner participants, each potential participant was assured that the research project was independent from, and would not provide information to, the Swedish Prison and Probation Service. The research design, data collection procedure, aims, and methods of the research were approved by the following authorities: (1) the Ethical Committee at Karolinska University Hospital; (2) the Regional Ethical
Research Committee at Karolinska Institute; and (3) The Swedish Prison and Probation Service. As a reward for participation, university students were offered a cinema ticket, the prisoners 100 Swedish crowns (approximately 14 US dollars).

Assessment instruments used in this thesis

The Novaco Anger Scale-1998-S (studies I, II, and III)

The 60-item NAS-1998-S is an adapted version of NAS-1998 (Novaco, 2003), which is the revised Part A of NAS-1990 (Novaco, 1994). When completing NAS-1998-S, respondents position themselves on a three-point response scale, (“Never true,” “Sometimes true,” and “Always true”). The items concern different aspects of anger, namely, cognitive mediation, physiological activation, behavioral impulses and regulation efforts. Forty-eight of the 60 items are divided equally into three clinically relevant scales: the Cognitive, Arousal, and Behavior scales. The Cognitive scale focuses on the cognitive mediation of anger as assessed by the four operational components (OCs) Justification, Rumination, Hostile attitude, and Suspicion. The Arousal scale assesses physiological activation in various central nervous, autonomic, and endocrine systems of the body, as operationalized by the four OCs Intensity, Duration, Somatic tension, and Irritability. The Behavior scale targets the role of action impulses in anger and is assessed as the sum of the following four OCs: Impulsive reaction, Verbal aggression, Physical confrontation, and Indirect expression. The remaining 12 items of the 60 build the Regulation scale, equally divided into three Regulation OCs, which assess the individual’s capacity for cognitive, physiological and behavioral regulation of anger. Given its content, the Regulation scale is expected to show negative correlations with the three other NAS scales. The Cognitive, Arousal, and Behavior scores are summed to a total score, NAS Total, which is a measure of general proneness for angry reactions, whether expressed or suppressed (Novaco, 2003). Importantly, the individual OCs of NAS-1998-S have insufficient empirical validity and are not interpreted as scales or measurement indices (R. W. Novaco, personal communication, November 4, 2002). However, their intercorrelations indicate theoretically important relationships between varying aspects of anger (Novaco, 1994). For the adapted version of NAS-1998-S, see Appendix A.

The Provocation Inventory, PI-S (studies I, II, and III)

The 25-item PI-S is the adapted Swedish version of PI (Novaco, 2003), and the revised Part B of NAS-1990 (Novaco, 1994). The items of PI-S assess anger intensity and generality across five provocative situations, called content categories (CCs), namely, Disrespectful treatment, Unfairness/Injustice, Frustration/Interruption, Annoying traits, and Irritations. On a four-point response scale, (“Not at all angry,” “A little angry,” “Fairly angry,” and “Very angry”), respondents indicate how angry they think they would be in those situations. Scores are summed to PI-Total, which is the only scale of PI-S. Similarly as the OCs of NAS-1998, the five CCs of PI-S are neither scales nor subscales, and thus have limited value for interpretation (Novaco, 2003). For the adapted version of PI-S, see Appendix B.
**Inconsistent Responding Index (INC) score of NAS-1998-S and PI-S**

Each of NAS-1998 and PI contain eight pairs of parallel items, which were identified as highly correlated (in the range .42 to .66) in the American standardization sample ($N = 1,546$) (Novaco, 2003). For each participant, these item pairs are checked for response values that differ by $> 1$ (for NAS-1998-S) or $> 2$ (for PI-S). The INC index is calculated by counting the number of inconsistent pairs for each participant. Novaco reported an average NAS-1998 INC score of .3 ($SD = .6$) in the standardization sample for the eight parallel-item pairs of NAS-1998. INC values $\geq 2$ (for NAS-1998-S), or $\geq 3$ (for PI-S) are taken to indicate inconsistent responding. When NAS-1998 and PI were investigated together (Novaco, 2003), the average total INC score was 1.1 ($SD = 1.3$) for the standardization sample. A total INC score $\geq 4$ was regarded as indicating a high level of inconsistency.

**The State-Trait Anger Expression Inventory-S, STAXI-2-S (studies I, II, and III)**

The 57-item STAXI-2-S is the Swedish adaptation of STAXI-2 (Spielberger, 1999) and is a remodeled and expanded version of the earlier 44-item STAXI (Spielberger, 1988). STAXI-2-S includes six scales and five subscales, aimed at assessing distinct dimensions of anger: experience (state and trait), expression, and control (Spielberger, 1999). The 15-item State anger scale (S-Anger) is aimed at exploring a momentary, fluctuating, psychobiological anger condition at a specific point in time (usually the test situation). Varying verbal and physical inclinations to anger are assessed by the three S-Anger subscales, namely, Feeling Angry (S-Anger/F), Feeling Like Expressing Verbal Anger (S-Anger/V), and Feeling Like Expressing Physical Anger (S-Anger/P). Each of the three S-Anger subscales include 5 items each. The 15 S-Anger items are scored on a four-point scale from 1 ("Not at all") through 2 ("Somewhat") and 3 ("Moderately so") to 4 ("Very much so").

The 10-item Trait Anger scale (T-Anger) assesses a person’s stable personality characteristic of anger proneness, as either “Angry Temperament,” T-Anger/T (anger as an experience and/or a reaction to little or no specific provocations) or “Angry Reaction,” T-Anger/R (anger as a reaction to perceived criticism or unfair treatment). Respondents indicate on a four-point scale (“Almost never,” “Sometimes,” “Often,” and “Almost always”) the frequency of experienced angry feelings over time. High values of T-Anger indicate frequent, intense angry feelings.

The remaining 32 items of STAXI-2-S are equally grouped into four scales, aimed at assessing the characteristic modes of outwardly and inwardly directed expression or control of anger. These scales are as follows: Anger Expression Out (acting out toward objects and persons), Anger Expression In (suppressing, holding in conscious anger), Anger Control Out (controlling the expression of anger outwards), and finally, Anger Control In (calming down, cooling off). The names of these scales are abbreviated AX-Out, AX-In, AC-Out, and AC-In. The AC-In of the original STAXI-2 is a new scale, not included in STAXI. The scores of AX-In, AX-Out, AC-In, and AC-Out sum to the Anger Expression Index (AX Index) as a unitary measure of anger expression (Spielberger, 1999). For the adapted version of STAXI-2-S, see Appendix C.
**Aggression Questionnaire-S, AQ-S (Study II)**

The revision of the Buss-Durkee Hostility Inventory, BDHI (Buss & Burkee, 1957) has resulted in a new inventory, the Aggression Questionnaire, AQ (Buss & Perry, 1992). AQ-S is the adapted Swedish version of AQ, translated by the authors of Study II. Altogether, AQ-S includes 29 items subdivided into four interrelated factors. Respondents indicate their responses on a 5-point response scale (from “Extremely uncharacteristic of me” to “Extremely characteristic of me”). The Physical aggression and Verbal aggression factors represent the instrumental and motor component, respectively, of aggressive behavior. Physical aggression is assessed by 9 items, describing situations of striking, hitting, harming, and threatening people, getting into fights with others, or exerting indirect aggression by breaking or smashing objects. Five items belong to the Verbal aggression factor, and assess tendencies to start arguments and disputes with friends and people in general. The third factor, Anger, represents the emotional, affective component of aggressive behavior, and assesses a physiological high-arousal state and preparation for aggression. The Anger items describe temperamental aspects, irritations, explosiveness, and hot-headed reactions. Finally, the Hostility factor represents the cognitive component of aggressive behavior, including feelings of ill will and injustice, jealousy, suspicion, rumoring and bitter attitudes in general. The sum of the four factor scale scores constitutes the general measure of aggressive reactions, called AQ Total. Buss and Perry reported normative values and appropriate values of reliability of AQ. For the adapted version of AQ-S, see Appendix D.

**Swedish universities Scales of Personality (SSP) (Study II)**

SSP (Gustavsson et al., 2000) is the remodeled version of the Karolinska Scales of Personality, KSP (Schalling, 1986). KSP is a well-known personality assessment, by means of which various, clinical and nonclinical have been investigated (Edman, Schalling, & Levander, 1983; Edman, Åsberg, Levander, & Schalling, 1986). In the construction of SSP, particular focus was laid on the aggressiveness-hostility-related scales of KSP. Compared with the KSP, SSP has a reduced number of items, higher values of Cronbach’s alpha coefficients (from .59 to .84), and an improved face validity. In a random, normative sample from the Swedish population (N = 741), Gustavsson et al. chose a three-factor structure of the inventory. The SSP scales Stress Susceptibility (SS), Lack of Assertiveness (LA), Mistrust (M), Embitterment (E), Somatic Trait Anxiety (STA), and Psychic Trait Anxiety (PTA) form the Neuroticism factor. The Aggressiveness factor consists of the Trait Irritability (TI), Verbal Trait Aggression (VTA), Physical Trait Aggression (PhTA), and Social Desirability (SD) scales, and the third factor, Extraversion, of the Impulsiveness (I), Adventure Seeking (AS), and Detachment (D) scales. However, Gustavsson et al. did not explicitly mention finding several, substantially sized (in the range .35 to .44) loadings on more than one factor. According to the recommendations of Tabachnick and Fidell (2001), only loadings of .32 or larger should be interpreted. In this case, a scrutiny of these coefficients suggests a somewhat overlapping factor structure.
Background and criminality characteristics (Study II)

In addition to the completion of the anger, aggression, and personality instruments NAS-1998-S, PI-S, STAXI-2-S, AQ-S, and SSP, the violent prisoner participants responded to questions on demographic and criminality characteristics. These included questions on age, education (length in years and type), ethnicity (participant’s and his parents’ place of birth), number of previous convictions, and present conviction (length in years and type).

Notes and comments by the participants

In addition to their completion of anger, aggression, and personality instruments and responses on the demographic and criminality characteristics, both the university student and violent prisoner participants were encouraged to write comments, notes, and questions – if any – regarding the items, wording, and response categories etc. directly on their test sheets. These qualitative data represent a valuable contribution regarding the cultural and contextual meaning of emotion words and idiomatic expressions for the participants who completed the adapted instruments.

Treatment of data

When the data collection was completed and the test sheets of all participants had been typed into computer files, the next step was to investigate the quality of the data base and to screen it for missing data and possible inaccuracy of input (e.g., outlier cases) as well as check the variables for normality and homoscedasticity of their distributions and for linearity of their relationships. In the optimal situation, the data are based on a large number of random cases with variables that are normally distributed and have low degrees of skewness and curtosis (i.e., within the range of ±1). In psychological research, the situation is rarely optimal, and the treatment of data is aimed at counterbalancing some of the shortcomings of the material. In the studies in this thesis, all statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS, 1999), version 10 for Windows.

Imputation of missing values

Missing data appear every time a participant fails to respond to any particular item. In the data file, missing values are empty spaces that should be filled in an appropriate way. The most important thing, however, is to investigate whether or not the missing data form a pattern, that is, are nonrandom. Nonrandom missing values may jeopardize the data quality. In the university student sample, there were no missing data, because the students were reminded to check their answers for omissions. In the violent prisoner sample, 12 participants (12.6%) failed to respond to a few anger items. This dropout did not jeopardize the reliability of data, as in no case responses were missing for more than two items within the same scale.

The missing item scores of NAS-1998-S and PI-S were imputed by means of a so-called prorating formula, described by Novaco (2003), the statistical adequacy of which has been demonstrated by Barrett (2001). For STAXI-2-S the missing item scores were imputed using the method described in the manual of STAXI-2 (Spielberger, 1999), thus, by the score “1” in the State and Trait parts, and the score
“2” in the Expression part. Altogether, imputations were performed for 105 of the 12,540 items completed by the violent prisoner participants (38 for NAS-1998-S, 17 for PI-S, and 50 for STAXI-2-S). In AQ-S and SSP, the missing item scores were replaced by the mean of the valid responses to the other items in the pertinent scale, a procedure described by Dåderman (2002). Among the 2,755 items (29 items x 95 men) of AQ completed by the violent prisoner participants, 31 (.01%) missing scores were imputed: 12 for the Physical aggression scale, 9 for the Verbal aggression scale, 6 for the Anger scale, and 4 for the Hostility scale. Among the 4,655 items (7 items x 7 scales x 95 men) of the selected SSP scales, there were 103 missing scores (.02%) in the data from the violent prisoner participants.

**Normality and linearity**

Normality was investigated by means of graphical examinations, Q-Q plots, histograms, and stem- and- leaf plots. With respect to scales with skewed distributions, statistics books commonly recommend transforming the values (Tabachick & Fidell, 2001, p. 80-83). Following this recommendation in the university student sample of Study I, the nonnormally distributed subscales and scales of NAS-1998-S and STAXI-2-S were transformed using log 10. On the other hand, the study described by Tabachnick and Fidell (1996, p. 684-706) and the recommendation of Spielberger (personal communication, 2002, May, 11) suggest that well known, commonly used instruments may be excepted from scale transformation. In Studies II and III, transformation of the scales was not practiced, and linearity was confirmed through the inspection of bivariate scatter plots.

**Detection of outliers**

A univariate outlier is an extreme, unusual observation on one variable, which obviously deviates from the rest of the distribution for that variable in that it lies outside the interval of ±3 standard deviation units from the mean. The presence of outlier cases may distort the result of a statistical analysis compared to what it would be with those outlier cases removed, and thus they can lead to serious misinterpretation of the investigated relationship. The detection of univariate outliers by means of scatter plots revealed no such cases in the samples of this thesis.

A multivariate outlier is a case in a data file that may have reasonable values on the separate variables, but has an unusual combination of values on the different variables. In Studies I and III, multivariate outliers were detected by calculating the Mahalanobis distance of each case from the centroid of the sample (Tabachnick & Fidell, 2001). In the university student sample, two multivariate outliers were detected, one for PI-S and one for STAXI-2-S. These cases were excluded when multivariate analyses (factor analyses in Study I and discriminant function analyses in Study III) were performed. In the sample of violent prisoners, no multivariate outliers were found.

**Bonferroni correction of p-values (Studies I and III)**

The Bonferroni correction is generally used for the adjustment of the selected α level, with the purpose to control for an overall type I error. Type I error means that one rejects a true null hypothesis and argues for an effect that, in fact, does not exist.
The risk of mass significance – one or more tests out of many reaching significance by chance – is a threat, in particular, when analyses of the same or very similar constructs are computed. In order to avoid mass significance, for bivariate correlation coefficients (Pearson’s $r$) and $z$-tests, Bonferroni corrections of the $p$-values were performed, using the method of Larzelere and Mulaik (1977). According to this method, significance on the selected alpha level requires a $p$ value equal to alpha divided by the number of statistical tests performed.

**Statistical analyses**

*Reliability measures (studies I and II)*

The statistical concept of reliability corresponds to consistency, which is the capacity of a test instrument to achieve the same result at repeated occasions. More simply, reliability is the accuracy of a test instrument to measure a concept. There are three main types of reliability measures; internal consistency, test-retest reliability and inter scorer reliability. The internal consistency, measured by Cronbach’s alpha coefficient, is the most important reliability figure and shows how the scale “hangs together” (Pallant, 2001). Generally, values of .70, or higher are considered as appropriate. However, in the case of scales with less than ten items, the calculation of a scale homogeneity measure or inter-item correlations is recommended (Pallant). In this thesis, the internal consistency type of reliability (i.e., both Cronbach’s alpha and the inter-item correlations) of the psychometric instruments was investigated in the university student sample (Study I) and the violent prisoner sample (Study II), respectively. For the university student sample, the choice of factor analyses made possible the computation of a third reliability measure, the so-called theta-coefficient, which is an alternative index of scale reliability. Theta is computed from the eigenvalue of the first, largest factor and the number of items included in the scale (Tabachnick & Fidell, 2001).

*Correlation analyses (Studies I and II)*

A correlation analysis has the purpose to expose the strength and direction of the linear association in pairs of variables. Correlation analyses were performed on four occasions in the present thesis. First, in the sample of university students (Study I), intrascale correlation coefficients (Pearson’s $r$) were calculated with the purpose to investigate the strength and direction of the relationships between the composing parts (i.e., OCs, CCs, subscales, scales, and total scores) of each of the anger assessment instruments. Second, also in Study I, scale intercorrelations (Pearson’s $r$) were calculated with the purpose to investigate the strength and direction of the relationships between the subscales and scales of NAS-1998-S, PI-S, and STAXI-2-S, respectively. Third, with the purpose to investigate the construct validity of NAS-1998-S in the sample of violent prisoners (Study II), correlations (Pearson’s $r$) between the scales of NAS-1998-S and the scales of PI-S, STAXI-2-S, AQ-S and SSP were calculated. Fourth, in order to investigate the response inconsistencies of the violent prisoners and university students on NAS-1998-S and PI-S, correlation coefficients (Pearson’s $r$) were calculated according to the instructions of Novaco (2003) for the eight parallel-item pairs of NAS-1998-S and PI-S, respectively.
**Exploratory factor analysis (EFA) (Study I)**

Exploratory factor analysis (EFA) is a multivariate statistical technique that has the capacity to derive a smaller number of underlying dimensions from a large amount of observed variables. Three EFAs were performed in the university student sample (Study I), in order to investigate whether the factor structures of the adaptations (i.e., NAS-1998-S, PI-S, and STAXI-2-S) were consistent, or comparable, with the factor structures identified for the original American assessment instruments by previous research. Furthermore, a fourth EFA was computed in Study I on the scales of all three adapted anger assessment instruments, in order to investigate the construct validity of those instruments. Construct validity in this case means the capacity of scales with similar conceptual focuses to group themselves into the same factors, related to the internal, external, and control aspects of anger.

**Discriminant function analysis (DFA) (Study III)**

Discriminant function analysis (DFA) is a multivariate statistical technique, which has the capacity to predict the group membership of subjects from linear combinations of a set of predictors. In Study III, three separate DFAs were performed with the purpose to investigate whether the anger scores of NAS-1998-S, PI-S, and STAXI-2-S can be combined into a linear combination (i.e., classification function) which successfully (i.e., better than chance alone) classifies the participants as members in their own category – violent prisoners or university students, respectively (Tabachnick & Fidell, 2001). The rates of correct classification were compared to what could be expected by chance alone (i.e., approximately 50% in our case). NAS-1998-S, PI-S, and STAXI-2-S were also compared regarding their proportions of correctly classified cases. With the purpose to determine the adequacy of classification by DFA, jackknife crossvalidation of the results was performed; thus, each case was classified using the function derived from all other cases.

**One-way analysis of variance (ANOVA) (Study II and III)**

ANOVA is a statistical method the purpose of which is to compare different groups in order to investigate whether the mean values differ significantly from each other. More specifically, it investigates whether any difference between the compared group means is small enough to be caused by random occurrences, which means that the investigated groups do not differ significantly from each other, and thus, the groups may come from the same population. In this case the null hypothesis is accepted. The null hypothesis is statistically tested against the alternative hypothesis, which proposes that there is a difference between the means of the investigated groups, meaning that the difference between the compared group means is large enough to be nonrandom, and thus that the groups are not likely to come from the same population.

One-way analyses of variance (ANOVAs) were performed on two occasions in the present thesis. First, the aim was to investigate whether the violent prisoner participants, who were recruited at three different prison settings and also represented four various crime categories, formed a homogenous sample, and thus, could be treated as one sample (Study II). Second, ANOVA was performed in order to compare
the reported levels of anger, as assessed by NAS-1998-S, PI-S, and STAXI-2-S, between the violent prisoner and university student samples of this thesis (Study III).

**T-score computations (Study III)**

With the purpose to compare the mean scale scores of the violent prisoner and university student samples with each other, and with the American standardization samples of NAS-1998, PI, and STAXI-2, respectively, the raw scale scores of the violent prisoner and university student participants were transformed into T-scores. T-scores have a distribution with a mean of 50 and a standard deviation of 10. Raw scores of university students and violent prisoners on NAS-1998-S, PI-S, and STAXI-2-S were transformed to age-related T-scores normalized on the standardization samples (Novaco, 2003; Spielberger, 1999).

**Z-tests (Study III)**

With the purpose to compare the anger scores of violent prisoners and university students in Sweden with the American standardization samples, ordinary z-tests with Bonferroni corrections of p-values were carried out to investigate whether the observed T-scores deviated significantly from 50.

**Notes and comments by the participants**

The notes and comments of the university student and violent prisoner participants were analyzed semi-qualitatively by frequency tabulations.

**MAIN RESULTS AND COMMENTS**

In the Main results and comments section the results of each study are described. In the Comments subsection of each study, results and analyses not presented in the study are touched upon.

**Study I: Swedish adaptations of the Novaco Anger Scale-1998, the Provocation Inventory and the State-Trait Anger Expression-2**

According to the results of the reliability calculations (internal consistency, homogeneity), NAS-1998-S, PI-S, and STAXI-2-S had acceptable values of Cronbach’s alpha and the mean inter-item correlation. Alpha values ranged between .70 and .90. Also, the theta coefficients (the reliability measure obtained in the four EFAs) were high: .87 (for NAS-1998-S), .84 (for PI-S), .71 (for STAXI-2-S), and .88 with all assessment instruments included (to assess construct validity).

Regarding the intrascale correlations of NAS-1998-S, the NAS-1998-S operational components (OCs) had appropriate bivariate correlations (measured by Pearson’s r) with those NAS-1998-S scales with which they were theoretically related (Novaco, 1994; Mills et al., 1998). The NAS-1998-S Cognitive, Arousal, and Behavior scales correlated nicely with each other, and for each of them the strongest relationship was with the NAS Total score. High to moderate correlations were found for several pairs of the NAS-1998-S OCs, in the range between .73 (for Behavior Impulsive reaction-Arousal Intensity) and .44 (for Cognitive Rumination-Arousal Irritability).
Also, the PI-S CCs showed strong correlations with PI-Total. The Regulation scale of NAS-1998-S and the Control scales of STAXI-2-S were positively correlated with each other and negatively with all other scales. The T-Anger scale of STAXI-2-S was closely related both to the AX-Out scale and to NAS-Total. AX-Out, AC-Out, and AC-In had high correlations with their total score, the AX-Index. Surprisingly, the Anger Expression-In scale was weakly related to the AX-Index in the university student sample.

Our hypothesis of a four-factor solution of NAS-1998-S won support. Using EFA with maximum-likelihood factor extraction and varimax rotation (Tabachnick & Fidell, 2001), this solution showed a few high loadings for each factor, ranging between .83 and .42. NAS-1998-S Arousal and Cognitive OCs (i.e., Duration, Somatic tension, Rumination, Irritability, and Suspicion) formed the first factor, interpreted as “Angry thoughts and arousal.” The second factor, “Hot reaction – High intensity,” was characterized by high loadings of Arousal and Behavior components, namely, Intensity, Impulsive reaction, and Indirect expression. The third factor, “Reactive anger – Aggressive behavior,” had substantial loadings from OCs of the Cognitive and Behavior scales (viz., Hostility, Physical confrontation, Verbal aggression, and Justification). The fourth factor was “Regulation,” with high loadings exclusively from the OCs of NAS-1998-S Regulation scale. The four factors accounted for 53.0% of the total variation. The good fit between the model and data was indicated by the nonsignificant chi-square value ($\chi^2 = 59.38, df = 51, p = .20$). The chosen four-factor solution was also confirmed by another EFA using principal axis factoring (PAF).

Regarding PI-S, the prediction of a single, underlying factor, interpreted as a unitary dimension of PI-Total, won support. Various factor extractions and rotations were performed. Maximum-likelihood factor extraction with varimax rotation revealed a single-factor solution with substantial factor loadings. The factor, interpreted as “Anger intensity and generality in provoking situations,” explained 51.5% of the variation. The good fit between the model and data was indicated by the nonsignificant chi-square value ($\chi^2 = 10.02, df = 5, p = .08$).

The hypothesis of a three-factor solution for STAXI-2-S, representing separate experience, expression, and control dimensions of anger, did not win support. Following the same method as reported by Spielberger (1999), an EFA with PAF extraction and promax (oblique) rotation revealed an overlapping three-factor solution. On the first factor, “Frequent, Uncontrolled Anger Expression,” a combination of trait, control, and expression aspects overlapped. The second factor was interpreted as “State Anger” because it included high loadings from the three S-Anger subscales of STAXI-2-S. Finally, the third factor, interpreted by us as “Suppressed Anger,” was exclusively composed by the AX-In scale.

An investigation of the construct validity of the adapted instruments by an EFA with maximum-likelihood factor extraction and varimax rotation yielded a three-factor solution. The first factor, “Outward Expression,” was formed by scales having external and expressive content, respectively, namely, the NAS-1998-S Behavior scale, the STAXI-2-S Anger Expression Out and Trait Anger scales, and also PI-S Total. On this factor there were also a moderate negative loading of the Anger Control Out scale and a weak loading of the State-Anger scale. The second factor, “Internal Experience,” had high loadings of scales with internal content, namely, the NAS-1998-S Arousal and
Cognitive scales, and the Anger Expression In scale of STAXI-2-S. The third factor, “Control,” had appropriate loadings of the NAS-1998-S Regulation scale and the STAXI-2-S scales of both inwardly and outwardly directed control. Acceptable fit between the three-factor model and data was supported by the nonsignificant chi-square value \( \chi^2 = 36.62, df = 25, p = .06 \). This model offers substantial similarity to Spielberger’s experience, expression, and control dimensions, and thus implies good construct validity of the adapted instruments.

**Comments**

*Evaluation of the notes and comments by the university students*

In the notes and comments given by the university student participants, 60% indicated the subtle, not clear-cut, character of different feeling states as “furious” and “mad” when translated into Swedish. Which of them was to be apprehended as stronger or weaker? Was it realistic to be “somewhat angry” but “very much irritated”? Especially the State-anger part of STAXI-2-S was challenging from this point of view. Almost all commenting university students reported that the three-point response scales of NAS-1998-S “forced” them into the middle category (i.e., “Sometimes”). Subjectively interpretable frequency-labels (e.g., “Sometimes. How often is sometimes?”) came up among the notes. Thirty percent of all subjects indicated difficulties of completing the anger items because of the lack of contextual information; how angry one got in a certain situation depended, according to the university students, very much on further considerations of justifiability, closeness to the target person, the target person’s appraised intention, and also the costs and consequences attached to the open expression or suppression of anger. Some of the university students noticed that they could be angry now and then with close family members, among which wives, mothers, and children were mentioned, but also that they laid special effort on controlling themselves in those situations. Many of them mentioned traffic situations and injustices at the workplace (e.g., with the manager involved) as highly irritating.

Fifteen percent of the university students commented on items with verbal content, suggesting that “swearing,” “saying nasty things,” “yelling,” and “telling people off” could mean different things depending on one’s cultural or ethnical background. Also, it seemed that many university student participants did not clearly separate anger from aggression. Eight university students pointed out the hypothetical character of their responses, that is, the possibility of reacting differently in a “real situation,” especially in one that included “self-defense.” Almost all of them laid particular emphasis on some righteousness aspect. Elderly participants (i.e., > 60 years old) noted that their anger and aggression proneness has declined, and that they had become much calmer and emphatic, compared with when they were younger.

*Inconsistent responding of university students on NAS-1998-S and PI-S*

As described in the *Methods* section, the NAS-1998-S and PI-S INC scores are formed on the basis of eight parallel item pairs of these assessment instruments, respectively, which are appropriately correlated with each other in the American standardization sample (Novaco, 2003), and thus, indicate patterns of careless, random responding. Ninety-seven out of the 100 university students responded consistently, or
with an acceptable level of consistency (i.e., were inconsistent in no more than one item pair) on the eight NAS-1998-S parallel item pairs used to check for inconsistent responding; the remaining three participants had INC scores 2 or higher. The average INC score was .25 ($SD = .50$) in the university student sample. Five of these parallel item pairs had appropriate correlations with each other (in the range .30 to .85). The other three were more weakly correlated (in the range .16 to .26). More specifically, these Swedish university students seemed to dissociate item 27 (with the content of “tell people off”) from item 28 (“When I get mad, I can easily hit someone”); this item pair had a lower correlation (Pearson’s $r = .21$) in our university student sample compared with the American standardization sample ($r = .52$). The same was the case for the pair consisting of items 43 (“If someone hits me first, I hit them back”) and 58 (“Some people need to get knocked around”) ($r = .16$ in our sample and $r = .50$ in the American standardization sample).

Regarding the eight parallel item pairs of PI-S, 83 of our 100 university student participants responded consistently, or with an acceptable level of consistency (i.e., had INC scores of 0 to 2), and the remaining 17 had INC scores of 3 or 4. The average INC score was 1.2 ($SD = 1.3$) in the sample. Some of the parallel item pairs of PI-S had low correlations in the Swedish university student sample, as compared with the American standardization sample. There was a particularly low correlation (.18) for the item pair consisting of items 3 (“Someone keeps making noise when you are trying to concentrate”) and 7 (“You are watching a TV program, when someone comes along and switches the channel”). Neither did they react in a consistent manner ($r = .20$) to items 11 (“Someone else gets credit for work that you did”) and 14 (“You get singled out for correction, when someone else doing the same thing is ignored”). Our university students reacted, on the other hand, consistently ($r = .40$) to the item pairs 18 and 19 (“Someone looks through your things without your permission” and “Being accused of something that you didn’t do”). When both NAS-1998-S and PI-S were investigated, the average INC index score for the university student sample was 1.4 ($SD = 1.5$). Eighty-eight participants responded with an acceptable level of consistency. INC scores of 4 or higher (i.e., a high level of inconsistency) were demonstrated by 12 university student participants.

**Study II: Internal reliability and construct validity of the Novaco Anger Scale-1998-S in a sample of violent prison inmates in Sweden**

Our results demonstrated that the violent prisoner participants of this study formed a homogeneous sample. Univariate ANOVAs indicated that independently of which prison they were recruited at and of what crime category they were convicted, the prison inmates of this study were similar to each other on education, criminal relapses (i.e., the number of previous convictions), and their reported levels of anger as measured by the scales of NAS-1998-S, with the exception of the Behavior scale. The internal consistency and scale homogeneity values were generally high in the violent prisoner sample. Alpha values ranged from .78 to .94 for the NAS-1998-S scales. Appropriate Cronbach’s alpha values were also found for PI-S (.94) and STAXI-2-S (from .78 to .91). AQ-S and SSP had generally high alpha values (from .72 to .93),
with the exception of the Verbal Aggression scale of AQ (.67) and the Social Desirability scale of SSP (.55).

Good psychometric quality was also indicated by the low INC score of NAS-1998-S for the violent prisoners of this study. The average INC score was .27 (SD = .53) for the eight parallel item pairs of NAS-1998. Sixty-nine participants (72.6%) responded consistently to all NAS-1998-S parallel item pairs. 24 men had an INC score of 1 (i.e., were inconsistent in only one item pair), which was still acceptable. Two participants scored 2 or higher, indicating careless responding. All analyses of this study were performed with the two high-scoring participants included (N = 95) and excluded (N = 93). As none of the results changed considerably, the two high-scoring participants were not removed.

Furthermore, NAS-1998-S scores of violent prisoners had significant (p < .05) correlations with demographic and criminality characteristics. The number of previous convictions had a moderate negative relationship with the capacity of control. Age and length of education correlated negatively with the NAS-1998-S scales, except Regulation. Regarding intrascale relationships of NAS-1998-S, the Cognitive, Arousal, and Behavior scales were highly positively correlated with each other and with the Total score. The REG scale correlated negatively with the other NAS-1998-S scales.

Investigation of the construct validity of NAS-1998-S in the sample of violent prisoners gave support to our expectations (see the Aims section of Study II). In summary, NAS Total was highly correlated with scales of anger and aggressiveness: AQ Total (.86), AQ Physical Aggression (.84), T-Anger and AQ Anger (.79 for each), AX Index (.78) and the scales of the SSP Aggression factor (.71 to .76). NAS Behavior correlated well with measures of expressed anger: AX-Out (.78)] and physical aggression [AQ Physical Aggression (.87), as well as with the VTA and PhTA scales of SSP (.71 and .80, respectively). Also, the NAS-1998-S Cognitive and Arousal scales were the highest correlates to measures of cognitive distortion: AQ Hostility (.50); and internal anger: AX-In (.30). The NAS Regulation scale was positively correlated with the Control scales of STAXI-2-S: AC-Out (.68) and AC-In (.65), and negatively with measures of anger expression. The NAS-1998-S scales had, on the other hand, low correlations (.17 to .48) with the Adventure Seeking and Detachment scales of the SSP Extraversion factor.

**Comments**

*The homogeneity of the violent prisoner sample*

The violent prisoner participants of this study formed a homogeneous sample also in terms of their type of present sentence, namely, life sentences (n = 12) and time limited sentences (n = 83). F-values of univariate ANOVAs demonstrated nonsignificant differences between the two groups regarding education [F (1, 93) = 1.90, p = .20], and number of previous convictions [F (1, 93) = 1.77, p = .68]. Nonsignificant differences were also found regarding their reported levels of anger as measured by the scales of NAS-1998-S, namely, Cognitive scale [F (1, 93) = 2.66, p = .11], Arousal scale [F (1, 93) = 1.78, p = .19], Regulation scale [F (1, 93) = 0.96, p = .33], and NAS Total [F (1, 93) = 3.59, p = .06]. There were significant differences between the groups regarding age [F (1, 93) = 3.82, p = .05], crime category [F (1, 93) = 11.01, p = .001], and the NAS-1998-S Behavior scale [F (1, 93) = 4.80, p = .03].
Evaluation of the notes and comments by the violent prisoner participants

The notes and comments given by the violent prisoner participants directly on the test sheets were less informative regarding the items of the assessment instruments than those given by the university student participants. Prisoners were less reflective on the contents and wording of items and were more confident in that they understood all items properly. None of the prisoners who commented on the assessment instruments reported any difficulties in understanding and completing the items. Fourteen of the 95 violent prisoners noted some comments directly on the test sheets. In every case the notes considered some details on their present prison circumstances, namely the crimes they had been convicted for, and anger or aggression related aspects of their lives prior to the present prison conviction.

Inconsistent responding of violent prisoners on PI-S

Eighty-six of the 95 violent prisoners responded at an acceptable consistency level on PI-S (i.e., had INC scores of 0 through 2) and the remaining nine had scores of 3 or 4. The average INC score was 1.2 ($SD = 1.1$). Among the eight parallel-item pairs of PI-S, seven had appropriate correlations (.30 through .61). For NAS-1998-S and PI-S together, the average total INC score in the violent prisoner sample was 1.4 ($SD = 1.3$). As indicated by this score, 92 of the 95 violent prisoners responded with an acceptable level of consistency (INC score 3 or lower).

Study III: Level of anger in Swedish samples of violent male prisoners and nonviolent male university students

The mean scale scores in the violent prisoner and nonviolent university student samples gave support to our first hypothesis, in which higher general anger and lower anger control in the violent prisoner sample was predicted. After Bonferroni correction, the $F$ values indicated a significantly ($p < .05$) higher level of anger in the violent prisoners than in the university students. This was the case for NAS-1998-S (Cognitive, Arousal, and Behavior scales, as well as NAS Total); for PI Total; and also for STAXI-2-S (State Anger, Trait Anger, Anger Expression Out, Anger Expression In scales, and AX Index). Also, in agreement with the first hypothesis, the $F$ values indicated significantly lower scores of violent prisoners on most dimensions of anger control, namely, the Regulation and Anger Control Out scales of NAS-1998-S, but not on the Anger Control In scale of STAXI-2-S. This was also the case when the violent prisoners were compared with the American standardization samples. In summary, the violent prisoners scored significantly higher on the majority of anger dimensions, and lower on regulation and control scales, compared with the Swedish university student sample and the American standardization samples.

In line with our second hypothesis, in which good prediction capacity of anger scales was hypothesized, the adapted assessment instruments were efficacious to varying degrees in predicting the group membership of violent prisoners and university students. The highest accuracy in this respect was obtained for NAS-1998-S. When entering the 15 OCs of NAS-1998-S into the Discriminant Function Analysis (DFA) using the stepwise method, the discriminant function was significant (Wilks’
lambda = .47, $X^2 (df = 5) = 143.68, p < .001$) and included the five OCs “Physical confrontation,” “Rumination,” “Suspicion,” “Indirect expression,” and “Irritation.” 88.2% of the cases were correctly classified using the original data and 86.2% using the cross-validated data.

When entering the five CCs of PI-S into a DFA with the stepwise method, the discriminant function was likewise significant (Wilks’ lambda = .90, $X^2 (df = 1) = 19.30, p < .001$) and included only the CC “Disrespect.” The prediction of group membership resulted in 65.8% correct classifications.

Entering the six scales of STAXI-2-S into a DFA with the stepwise method resulted in a discriminant function (Wilks’ lambda = .71, $X^2 (df = 4) = 64.32, p < .001$) with the S-Anger, AX-In, AC-Out and AC-In scales. 72.3% of the cases were correctly classified using the original data and 70.8% using the cross-validated data (Table 3). In this analysis, the correlations between the predictors and the discriminant function indicated that the S-Anger scale was the best single predictor for distinguishing between university students and violent prisoners.

**GENERAL DISCUSSION**

The adaptation of psychometric assessment instruments

The principal aim of this thesis was the adaptation of the psychometric anger instruments Novaco Anger Scale, version 1998 (NAS-1998), the Provocation Inventory (PI), and the State-Trait Anger Expression Inventory-2 (STAXI-2) to the Swedish context. During the adaptation process, the assessment instruments were developed and investigated with regard to their various psychometric properties in two male samples in Sweden: violent prison inmates and nonviolent university students. The aims of Study I were to investigate the factor structures, construct validity, internal reliability, and scale relationships of the adapted instruments NAS-1998-S, PI-S, and STAXI-2-S, in a sample of male, university students ($N = 100$). The aim of Study II was to investigate the internal reliability, scale relationships, and construct validity of NAS-1998-S in a sample of violent male prisoners ($N = 95$). In Study III, the mean anger scale scores of NAS-1998-S, PI-S, and STAXI-2-S were compared between the Swedish samples of male violent prisoners and male nonviolent university students, as well as between the Swedish samples and the American standardization samples. Also, the capacity of anger instruments to predict group membership of violent prisoners and university students was investigated.

The main challenge of the adaptation process was of a dual nature; on one hand, we set out to develop adaptations that maintained good levels of correspondence with the original, American assessment instruments. On the other hand, our ambition was to develop adaptations that achieved an appropriate fit with the cultural and linguistic context of Swedish society. The adaptation of the anger assessment instruments was done through the co-operation of the authors with an external, bilingual back-translator, and the authors of the original assessment instruments. This support and external control over the adaptation work was very valuable.

A considerable challenge of the adaptation process was the difficulty of finding corresponding emotion words and idiomatic expressions between the Swedish and
American-English languages. According to the notes and comments provided by the university students, many of them found the emotion words and idiomatic expressions of the varying intensity states of anger (e.g., annoyance, irritation, and fury) complex, subtle, and lacking clear-cut definition. This finding may be contemplated against the background of the long tradition of interchangeable use of concepts (Spielberger, Reheiser et al., 1995; Spielberger, Ritterband et al., 1995) and also the generally assumed, socially sensitive character of the subject of investigation (Novaco, 2003). The notes and comments of the university students correspond with the findings of Wierzbicka (1994) and with the ideas of the cross-cultural perspective (Averill, 1983; Kitayama, 2002; Russell, 1991; Tanaka-Matsumi, 1995). One should probably be cautious in assuming that the pure lexical meanings of words cover their complex and subtle cultural meanings, and also in assuming that the English word anger itself has exact correspondents in other languages. The issue of the cross-cultural, semantic equivalency of words addresses basic assumptions of the psychometric perspective.

**Psychometric qualities of adapted anger instruments in Sweden**

*Factor structures*

In the sample of university students (Study I), the EFAs of NAS-1998-S and PI-S gave support to our hypothetical factor solutions. The NAS-1998-S factors “Reactive anger-Aggressive behavior,” “Hot reaction-High intensity,” and “Angry thoughts and arousal,” were interpreted as comparable to the pattern of items in the three-factor model reported for NAS version 1990 by R. W. Novaco (personal communication, October 22, 2002). As expected, the fourth factor, “Regulation,” included the three operational components of the Regulation scale, which was first introduced in NAS-1998 (Novaco, 2003). The EFA of PI-S gave support to the hypothetical single factor, labeled “Anger intensity and generality in provoking situations.” This one-factor solution reflected the unitary, single scale structure of PI.

In the examination of the underlying structure of STAXI-2-S, EFA resulted in a three-factor model with the factors “Frequent, Uncontrolled Anger Expression,” “State Anger,” and “Suppressed Anger.” Contrary to our hypothesis, these three factors did not indicate separate experience, expression, and control dimensions, as these theoretically separate elements overlapped and built on the first factor. This result for STAXI-2-S may reflect a factor instability due to the modest sample size, but it might also reflect a real cultural difference. After all, our students may associate outward expressions of anger (i.e., AX-Out) with some general problem dimension that also includes lacking self-control and proneness to frequent anger. Most importantly, the accepted three-factor model for STAXI-2-S in Study I has limited value for interpretation and is regarded, in contrast to the original model, as exploratory. In summary, the results gave some support to the cross-cultural validity of NAS-1998-S and PI-S. This support was less encouraging regarding STAXI-2-S.

*Construct validity of NAS-1998-S, PI-S, and STAXI-2-S*
The examination of construct validity in Study I indicated that the scales of NAS-1998-S, PI-S, and STAXI-2-S assessed three, broad factors of the multidimensional anger concept, interpreted as (1) “Outward Expression,” (2) “Internal Experience,” and (3) “Control.” This model offered substantial similarity to Spielberger’s dimensions of experience, expression and control and, thus, implied appropriate construct validity. According to our speculations, the loading patterns of the NAS-1998-S Arousal, Cognitive, and STAXI-2-S Anger Control Out scales on both the Outward expression and Internal Experience factors reflect the complex nature of anger.

There were also strong indications of fine construct validity of NAS-1998-S in the violent prisoner sample (Study II). Despite the overall considerable correlations between the inventories, the high correlations between the NAS-1998-S scales and measures of anger and aggression indicated that NAS-1998-S has a sound conceptual focus. The correlations with the distinct traits of detachment and adventure seeking were consistently low. The pattern of moderate, “middle-range” relationships between the NAS-1998-S scales and the Impulsiveness scale of SSP might be explained by a conceptual overlap between the measured constructs. The observed correlation patterns were in line with the findings of Novaco (2003) and were also interpreted as indications of good cross-cultural validity of NAS-1998-S.

**Scale correlations of NAS-1998-S, PI-S and STAXI-2-S in the university student sample**

The results of Study I provided evidence for good scale relationships of NAS-1998-S and PI-S in the university student sample. The scale components and scales of NAS-1998-S and PI-S were correlated consistently with the theoretical expectations regarding NAS-1998 (Mills et al., 1998; Novaco, 1994; Novaco, 2003). The fifteen OCs of NAS-1998-S and the five CCs of PI-S had appropriate relationships with each other, and high correlations with their respective scales. In line with the findings of Novaco (1994), strong correlations were found for the OCs Cognitive Rumination with Arousal Duration and Arousal Irritability, and also for the OC Arousal Intensity with several operational components of the Behavior scale (i.e., Impulsive reaction, Physical confrontation, and Verbal expression). In contrast to the results of Novaco (1994), Arousal Intensity was not strongly related to Cognitive Rumination but instead to the Cognitive Hostile attitude. Consistent with previous findings (Mills et al.; Novaco; Novaco & Taylor, 2004), the NAS-1998-S scales had appropriate relationships with each other and had their highest correlations with NAS-Total. The NAS-1998-S regulation components were positively related with the Regulation scale and showed negative associations with the rest of the instrument’s scales. The Regulation scale had negative correlations with the anger scales of each instrument and had substantial positive correlations with the two outwardly and inwardly directed Control scales of STAXI-2-S.

The results of Study I also provided some evidence for good intrascale relationships of STAXI-2-S in the university student sample. In line with Spielberger (1999), the Trait Anger scale was strongly associated with the Anger Expression Out scale, and both of them had moderate to strong negative correlations with the two control scales of STAXI-2-S. The Anger Expression In and Out scales were unrelated.
With the exception of the Anger Expression In scale, the Expression and Control scales were strongly related to the AX Index.

Regarding the interscale correlations between NAS-1998-S and STAXI-2-S, the Trait Anger scale of STAXI-2-S was strongly related to NAS-1998-S Total, supporting Novaco (1994) and, also, Novaco and Taylor (2004). The STAXI-2-S Trait Anger scale had a moderate correlation with the Cognitive scale of NAS-1998-S, which may be interpreted as indicative of the relevance of hostile thoughts for the angry personality as suggested by Spielberger et al. (1999).

**Scale correlations of NAS-1998-S, PI-S and STAXI-2-S in the violent prisoner sample**

The results of Study II provided evidence for good scale relationships of NAS-1998-S in the violent prisoner sample, and thus supported the findings of Novaco (1994, 2003) and Mills et al. (1998). The NAS-1998-S Cognitive, Arousal, and Behavior scales had appropriate correlations with each other and high positive correlations with NAS Total. Furthermore, the scales of NAS-1998-S had considerable correlations with demographic and criminality variables. According to the results, older violent prisoners had more angry and destructive behavioral impulses and lower capacity of control. Low education correlated moderately with high levels of anger triggering cognitions, angry arousal, and general proneness to angry reactions. Furthermore, numerous previous convictions were related to low control capacity.

The STAXI-2-S Trait Anger and Anger Expression Out scales were considerably correlated with each other and with scales of outwardly expressed anger (NAS-1998-S Behavior scale and total score; AQ Physical Aggression scale). The Anger Expression In and Out scales were unrelated. These results of Study II were consistent with those of Spielberger (1999). The correlations between the scales of STAXI-2-S and NAS-1998-S were, however, lower in the violent prisoner sample than those reported by Novaco and Taylor (2004). In particular, the Anger Expression In (AX-In) scale deviated from what could have been expected on the basis of previous studies; it had low but significant correlations exclusively with measures of internal anger, cognitive distortions, and inwardly directed control (i.e., the NAS-1998-S Cognitive and Arousal scales, AQ Hostility, and AC-In of STAXI-2-S). As hypothesized by Lindqvist et al. (2003), one explanation may be the Swedish behavioral norms, which censure the open expression and admission of strong emotions. Swedes may practice anger suppression as a way of coping: boiling inside but nevertheless displaying civilized behavior. Accordingly, suppressed anger has low correlations with openly expressed anger (the Behavior scale of NAS-1998-S) and general anger disposition (NAS Total).

**The discriminative capacity of NAS-1998-S, PI-S, and STAXI-2-S**

In line with the second hypothesis of Study III, in which good discriminative capacity of the psychometric anger instruments was predicted, the three anger instruments efficaciously discriminated between the Swedish violent prisoner and university student samples. The highest discriminative capacity was demonstrated for NAS-1998-S. In line with the findings of Jones et al. (1999), the OCs “Physical confrontation” and “Irritability” of NAS-1998-S were selected in the prediction model. Our results support previous studies that predicted good discriminative capacity of the
NAS-1990 and STAXI (Cornell, Peterson, & Richards, 1999; Jones et al), and may also be interpreted as indicating good cross-cultural validity of the adapted instruments.

**Additional findings of interest**

**Internal reliability of NAS-1998-S, PI-S, and STAXI-2-S**

The results of Studies I and II provide evidence for good internal reliability (i.e., Cronbach’s alpha values and mean inter-item correlations) of NAS-1998-S, PI-S, and STAXI-2-S in the Swedish violent prisoner and university student samples. The items included in the scales “hang together,” and assess a unitary anger construct. In the violent prisoner sample, also the scales of AQ-S and SSP achieved appropriate levels of reliability. The only exceptions were the AQ Verbal Aggression scale and the Social Desirability scale of SSP.

**Findings considering the personality instrument SSP**

Whereas the personality scales of SSP were not the focus of this thesis, they were of particular interest as they had not been administered previously to a criminal sample in Sweden. In the violent prisoner sample, the T-Anger scale of STAXI-2-S had weak, negative associations with the Social Desirability scale of SSP and moderate, positive ones with its Distrust scale of SSP, which is in line with Kuppens (2005). The good psychometric qualities of all but the Social Desirability scale supported the similar findings of Gustavsson et al. (2000). Compared with these authors’ normative SSP data for males, the violent prisoners scored higher (by approximately one SD unit) on the Physical trait aggression scale, and, also higher (by half an SD unit) on the SSP Verbal trait aggression, Adventure seeking, and Impulsiveness. This may be interpreted as further support to previous studies on the Swedish offender population (Longato-Stadler et al., 2002). Gustavsson et al. reported, in contrast, levels of Trait irritability, Detachment, and Social desirability that were more similar to the corresponding scores found in Study II. The considerable scale correlations of the SSP Physical and Verbal trait aggression scales with other measures of aggression and anger indicate good construct validity of these scales. Our results indicate improved psychometric properties of the trait aggression scales of SSP (Gustavsson et al.) compared to KSP (Schalling, 1986).

**Cross-cultural interpretations: anger in Swedish samples compared with American standardization samples**

The investigation of the violent prisoner and university student mean scale scores gave support to the first hypothesis of Study III, where higher general anger and lower anger control in the violent prisoner sample had been predicted. Whereas the violent prisoner and university student samples of this thesis were selected to represent different levels of aggressiveness (see *Aims of the work described in this thesis*), the higher level of anger in the violent prisoners may be interpreted as indicating the essential importance of anger to aggression.
Also in line with the first hypothesis of Study III, the violent prisoners scored significantly higher on the majority of anger dimensions, and lower on regulation and control scales, compared with the American standardization samples. The NAS-1998-S COG and Total scores of the violent prisoners were high, in particular. In summary, the results showing a relatively high level of general anger and a low level of anger control in the violent prisoners, compared with both the university student sample and the American standardization samples, may be interpreted as supportive of studies that emphasize the prevalence of unregulated, problematic anger in violent offenders (see the Anger and violent crime subsection of the Introduction). This result may be also interpreted as supportive of Ford (1991), Granic and Butler (1998) and Copello and Tata (1990), all of whom argued for distorted, antisocial cognition in offender samples.

According to the results of Study III, the Swedish university students scored somewhat lower than Americans on the State, Trait and Anger Expression Out scales of STAXI-2-S, and also on the Arousal scale of NAS-1998-S and on PI-Total. However, this may be regarded as a minor discrepancy, as the values of university students do not deviate dramatically from the values of standardization samples. In line with the conclusions of Håseth (1996) regarding STAXI, the STAXI-2-S scores of the university students may reflect some level of social desirability and tendencies of underreport on that instrument. A possible explanation is that highly educated people may regard themselves as emotionally balanced, civilized persons and respond to STAXI-2-S anger items on the basis of this self-image. Most importantly, the anger scores of the university students were in the range between $T = 45$ and $T = 55$, and thus, may be regarded as “average” according to the generally accepted clinical interpretation of the NAS-1998 and PI scores (Novaco, 2003), and are also similar to the STAXI scores reported by Håseth for the Norwegian sample.

A cross-cultural dimension of the results is the high anger suppression (as assessed by the AX-In scale of STAXI-2-S) in both Swedish samples (Study III). Thus, both violent prisoners and university students scored high on suppressed anger in comparison with the members of the American standardization samples. This result is in line with Kitayama’s emphasis on culturally unique factors, such as ecology, language, customs, and practices, that probably influence the expression of anger in a certain culture. Also in line with Daun (1998), the suppression of angry feelings (i.e., concealing angry arousal and appearing calm on the surface) may be explained as a normative strategy in Sweden, encouraged by the preference of self-control and the normative censure of openly admitting and expressing strong emotions.

In particular, highly educated university students may strive to be seen as behaving, in a civilized manner. This result may also explain the disinclination of the university students to report intense hot-headedness in provocative situations (i.e., PI Total). In line with Daun (1998), Averill (1983), Kitayama (2002), and Tanaka-Matsumi (1995), the university students’ appraisal of a situation as anger rousing, and their reported level of anger intensity in such a situation, may expose normative rules that are encouraged in their particular cultural, social, and educational milieu. In general, it may be speculated that provocative situations are somewhat culture specific: what is experienced as highly arousing may differ between Swedish university students and American standardization samples. The relatively large number
of inconsistent responders on the PI-S parallel-item pairs, in both the violent prisoner and university student samples, suggests a certain cross-cultural limitation of PI-S. Also, the relatively low discriminative capacity of PI-S may be interpreted as additional support of such an explanation. In line with Daun and also Novaco (2003), the readiness to admit and report angry feelings may be variable. In line with the findings of Håseth (1996), it may be the case that the university students in our Swedish sample underreported the intensity of anger in confrontational situations.

Considering the responses on, PI-S in particular, the university students in Sweden reacted most intensely to situations of unfairness or injustice, thus, to situations in which they experienced bullying, discrimination, or false accusation. This result is highly consistent with their high score on the operational component Cognitive Justification of the NAS-1998-S Cognitive scale (Study I). This part of the results of Study I suggests the university students’ high estimation of the justice principle, which may also be claimed to characterize Swedish society in general.

Another central factor in interpreting the relatively high level of anger suppression (AX-In), and the low level of reported reactions to provocations (PI-Total) in the university students is age. Due to an exceptionally generous policy in Sweden regarding higher education, some of the university students in our sample are relatively old. Older people may be more mature and balanced in their emotions; they may be less easily provoked, or have successfully learned to handle those emotions. Several elderly students noted that their anger had been worse when they were younger. Another unexpected, but still interpretable, result is the lower level of inwardly directed control (as assessed by the AC-In scale of STAXI-2-S) in the Swedish samples, compared with the American standardization samples. More specifically, our violent prisoners and university students reported a lower effort to calm down and “cool off” through, for instance, breathing and meditation techniques. A possible explanation may be that anger suppression, the socially encouraged practice that is frequently reported by Swedes, can act as a substitute for active, inwardly directed control.

Inconsistent responding to NAS-1998-S and PI-S in the samples in Sweden

The level of inconsistent responding to the items of NAS-1998-S and PI-S in the university student sample may have cross-cultural indications. In general, the level of inconsistent responding in the eight NAS-1998-S parallel-item pairs was low in the university student sample. The average INC score was close to the corresponding score reported by Novaco (2003) for the American standardization sample. In contrast to the response pattern of the American normative sample of the NAS-1998-S parallel-item pairs, Swedish university students differentiate to a large degree between verbal and physical aggression items; it was all right to “tell somebody off,” but not to hit people. The same may be argued on justifiability; it was acceptable for the university students to hit back as a reaction to a prior attack, but not to knock people around without provocation. When the inconsistent responses of the university students on NAS-1998-S and PI-S were added together, the average total INC score was only slightly higher than that reported by Novaco. In the sample of violent criminals, the level of inconsistent responding was low for NAS-1998-S but, consistently with what was found for the university students, higher for PI-S.
Clinical implications regarding violent offenders

According to the results of Study II, the violent prisoner participants formed a homogeneous sample. Thus, independently of prison, crime category, and type of conviction, the violent prisoners possessed several similar characteristics, namely, level of education, number of previous convictions, and most dimensions of anger as assessed by NAS-1998-S, with the exception of the Behavior scale.

The results of Study II supported previous studies that have claimed that violent criminals are characterized by problematic, poorly regulated anger. This argument was supported by the relatively high anger scores of the violent prisoners of this thesis. In Study III it was also demonstrated that the violent prisoners scored significantly higher on anger and lower on anger control than our university students and the persons in the American standardization samples (Novaco, 2003; Spielberger, 1999). However, it is important to emphasize that the anger scores of our violent prisoner sample are not to be regarded as pathologically high. They are high in comparison with university students and normative Americans, but they are still normal according to the clinical meaning of T-scores.

Although it may be true that violent offenders are not necessarily angry, and also that people who act violently are not always motivated by angry arousal (Novaco, et al., 2001), many of our violent prisoners reported intense, poorly regulated angry arousal, distorted cognition, and strong tendencies towards behavioral anger expression.

Anger, aggression, and comorbid mental disorders

The relatively high levels of anger, low levels of anger control, and frequent criminal relapses in our violent prisoners may be interpreted as indicative of comorbid neuropsychiatric impairments, personality disorders, and psychopathy in that sample. It may be speculated that poor anger management, impulsiveness, and hostility (as assessed by the OCs of NAS-1998-S and the scales of NAS-1998-S and STAXI-2-S) contribute to those personal/dispositional mechanisms, which according to Shani and Novaco (1999) promote the occurrence of aggressive manifestations and contribute to a complex, psychosocial handicap which limits a person’s life chances. This statement is also in line with the views of Eckhardt and Deffenbacher (1995), Novaco (1986), and Novaco and Taylor (2004) that dyscontrolled anger is comorbid with long-term personal and social problems. In particular, personality disorders, such as the antisocial personality disorder (the overrepresentation of which in criminals is demonstrated by the population data from the Kumla prison, and by Longato-Stadler et al., 2002) and psychopathy (Dåderman & Kristiansson, 2003; Johansson et al., 2002) may be of vital importance. This interpretation of our results is also in line with Sutherland’s (1996) ideas of criminal subcultures: Prisoners often come from chaotic, underprivileged families, they live marginalized lives, lack employable skills, and associate with other individuals who, like themselves, have attitudes and skills that promote criminal activities.

On the other hand, the relatively high levels of anger mobilization in the violent prisoners may have a vital psychosocial adaptive value for them. This claim may support the argument of Polaschek and Reynolds (2001), the evolutionary ideas
(Barrett et al., 2002; Buss, 1998; Fessler et al., 2004; Gazzaniga et al., 1998; Nesse & Williams, 1996), and the social attention holding theory (Gilbert, 1998), in particular. Angry and dangerous-looking men may achieve status, prestige, and dominance, and have their way in the tough world of offenders. A tough, violent prone attitude may also minimize the threat of disrepute, dishonor, humiliation, and loss of face, providing larger access to survival and reproductive resources. This explanation is also in line with the social learning theories (Averill, 1983; Salzinger, 1995; Tanaka-Matsumi, 1995): having one’s way through angry outbursts may reinforce the preference for this tactic, at least in the short run. In line with Sutherland (1996), it may be the case that anger and violence win social reinforcement through peer approval in a criminal subculture. Anger has a good pay-off when the angry person succeeds in dominating his or her environment. In the long run, and from the viewpoint of the larger society, however, anger may become dysfunctional and harmful in that it may contribute to further criminal relapses and repeated convictions. Considering the high number of previous convictions among our violent prisoners, it may be assumed that dysregulated anger and comorbid, dispositional factors may contribute to their limited psychosocial functioning and recidivism.

**Psychopathy**

The violent prisoners demonstrated relatively high levels of distorted cognition, and also an overall, exaggerated proneness to react with anger. The high NAS-1998-S Cognitive scores of the violent offenders support the previous emphasis on the role of cognitive distortions and interpretative bias in offenders (Copello & Tata, 1990; Ford, 1991; Granic & Butler, 1998). The relatively high levels of hostility and rumination (as assessed by the OCs of NAS-1998-S Cognitive scale) may also support the findings of Serin (1991) and Serin and Kuriychuk (1994), suggesting some prevalence of psychopathy in the violent prisoner sample. In line with previous studies on psychopathy (Grann et al., 1999; Hart et al., 1988; Tengström et al., 2000), the prevalence of psychopathy in our violent prisoners is also suggested by their relatively high frequency of criminal recidivism. Further support for this speculation is presented by the particularly high discriminative power of the PI-S content category “Disrespect” in DFA.. Our violent prisoners’ high sensitivity to demeaning criticism, effrontery, intrusive behavior, and mockery (assessed by “Disrespect”) may indicate a response pattern that is particularly characteristic of psychopaths according to Serin. Our speculation of the prevalence of psychopathy in the violent prisoner sample of this thesis is in line with studies that have made similar arguments with respect to Swedish offender populations (Dåderman & Kristiansson, 2003; Johansson et al., 2002). In particular, the results of Johansson et al. are noteworthy, as they were obtained from the same, nation-wide assessment unit in Kumla prison.

**Therapeutic needs of violent prisoners**

The cognitive distortions and the overall, exaggerated proneness to react with anger, which is demonstrated by the relatively high NAS-1998-S COG and Total scores of violent prisoners, may be interpreted as indications to the need for therapeutic interventions in that sample. This assumption is supportive of the findings of Ford (1991), and Novaco et al. (2001).
On the other hand, the relatively high anger scores of violent prisoners should not be interpreted as implying a causal relationship between anger and violent crimes. In fact, we do not know how angry and poorly controlled the subjects are normally, outside of prison. In agreement with the findings of Mills et al. (1998), the high levels of self-reported anger in violent prisoners may also reflect prison conditions. Several comments, provided by the violent prisoners, may be related to their high level of anger, and thus, directly associated to their living conditions in the prison. The high anger scores may be related to high levels of anxiety in the participants, the majority of whom were in their early phase of imprisonment (since two months or less), and thus had not yet adjusted to being incarcerated.

Consistent with the above discussion on the multiple handicap in violent offenders, the high levels of anxiety in the violent prisoner sample may also be related to the prevalence of neuropsychiatric impairments, for example, dyslexia and ADHD. This suggestion is supported by studies that highlight an overrepresentation of dyslexia and ADHD among offenders (see the Anger, aggression, and comorbid psychiatric disorders subsection). As found by Jensen et al. (1999), offenders with dyslexia score higher on both somatic and psychic anxiety scales of the KSP than offenders without that diagnosis.

Limitations and scope of this thesis

Perspective, method, and conceptualization

The choice of a particular perspective (in our case, psychometric) implies more or less that one forgoes the alternatives. An inevitable reality of this thesis is represented by its explicit focus on psychometric assessment instruments alone, which may limit the understanding of complex, dynamic phenomena. Novaco et al. (2001) advocate the administration of multiple assessment measurements, such as interviews with the participant and persons in his or her environment, behavioral observations, examination of case notes, and background reports. They argue that “Proper anger assessment cannot be gained from psychometric measures alone, particularly when self-reports of anger are given with considerable guardedness” (p. 290). Regarding the violent prisoner sample of this thesis, a limiting factor was the absence of concurrent anger measures, such as observational ratings or staff ratings of angry expression. The data from the university student sample might have benefited from the inclusion of ratings of the participants’ anger by a family member. On the basis of information on participants provided by the Swedish Prison and Probation Service and the Student Bureau of Stockholm University some of these limitations may be possible to address in future research.

Nonetheless, certain distinctions should be established between the recognition of the limited nature of self-report instruments and the universal and categorical rejection of them per se, as suggested by Salzinger (1995). Some of the results of this thesis offer a limited support to Salzinger’s argument; the university students explicitly noted difficulties vis-à-vis the self-report of subtle, unclearly defined internal occurrences, and also insecurity about the hypothetical character of their responses, these being given to items rather than to real provocations. In line with Russel (1991, p. 443), it may be the case that “Rather than properly defined, happiness,sadness,
fear, and anger, and other natural categories of emotion are fuzzy: (a) Borders between categories are vague, rather than clear-cut. ... (b) Membership within a category is a matter of degree rather than all or none. Actual cases of anger vary in how well they exemplify the concept. ... (c) Different categories tend to overlap one another rather than to be mutually exclusive.” Nevertheless, on the basis of the relatively consistent responses of our university students on NAS-1998-S, we argue that there is convincing support for the basic statements of psychometrics: people can successfully verbalize private experiences in a valid and proper way. Verbal reports on anger may correspond to at least some degree, with real-life reactions of anger in provoking situations.

The conceptualization of aggression as the prevalence of violent criminal offences may constitute a further subject of contemplation. In accordance with Wang and Diamond (1999), it may be argued that the present incarceration for violent crimes says little about their level of aggressiveness.

Finally, a limitation of the design of this thesis is represented by the focus on males, and thus, the a priori exclusion of female participants. Unfortunately, this limitation is in line with contemporary research trends, in which females remain a neglected population. As was pointed out by Suter et al. (2002), the overwhelming majority of research studies investigate various characteristics of male samples. One reason for this may be the fact that acts of violence are most frequently committed by men. However, this may be an explanation, but not an excuse; the limitation represented by the lack of female participants in this thesis will be addressed by us in later research. Our research plans include the collection of female data, in both university students and incarcerated criminal offenders as well as in nonclinical (“normal”) female samples, with the purpose of investigation of the adapted instruments and comparisons with our male samples. One of us (A. M. D.) has already sampled data in a group of predominantly female clinical neuropsychologists, but these data have not yet been evaluated. An extremely evocative research question may be to use a four-group design of male and female, offender and nonoffender samples to examine whether different levels of anger or gender can explain the difference in the prevalence of criminal offences. Another stimulating research question may be of linguistic nature and concern the emotion words in the Swedish language: how does the associative map of Swedish emotion words look? Which one of them is closest to the English word anger? What kind of associations do these words possibly involve?

**External validity**

The concept of external validity concerns the universal applicability of the findings and conclusions of this thesis and, thus, the question whether they can be generalized to the larger Swedish community and clinical population. The external validity of the studies of this thesis may have been influenced by various methodological considerations, such as the modest sample size and the limited randomness of the selection of participants to the samples.

**External validity in the violent prisoner sample**

As for the violent prisoner sample, the results of this thesis may possibly have been influenced by the terms of the permission given by the Swedish Prison and
Probation Service. First of all, a random assignment of participants to the sample was not offered. This limitation may have been motivated by some characteristics of the incarcerated offender population in Sweden: the difficulty of locating randomly assigned participants in, and during their transports between, various prison settings in the country, and the probable high drop-out rate due to the fact that many of them would have declined to participate (L. Krantz, personal communication, March 3, 2002).

The results of this thesis may also have been influenced by a number of diverse, practical, and security considerations of the prison settings. There was an initial large dropout of seven contacted prisons, which, despite permission and recommendations from the central authority (i.e., the Swedish Prison and Probation Service), chose not to participate. The reasons for noncooperation varied, for instance, negative attitudes to external research and security considerations. In some cases, the anger and aggressiveness instruments of this thesis were considered by the prison staff to interfere with, and thus jeopardize, the success of the ongoing therapeutic work with the inmates. The involvement of staff in participant selection, and to some degrees in data collection, may have implied a certain degree of dropout, in that participants with paranoid tendencies felt threatened by the psychometric tests and therefore refused to cooperate. Furthermore, the authors of the studies of this thesis have no information regarding the population of those prisons that chose not to cooperate. However, it may be pointed out that the age of the prisoner participants of this thesis is similar to that of the average prisoner in Sweden (see the Prison inmates in Sweden subsection).

The next challenge was to find the participants who had given informed consent to participation. After all, prison settings are dynamic, extreme milieus that gather a large number of restless, impulsive, and poorly stimulated people. A prison riot occurred at the Norrtälje prison during the summer of 2002, the night before data collection: a group of prisoners became intoxicated on fermented sugar and took over their cell block. Because of this riot, this thesis suffered a loss of 19 potential participants who were rearrested and relocated out of reach for research purposes. The prison riot also caused a delay of two months, as the data collection was considered inappropriate in that situation. The general state of mood of the prisoners after the riot might have differed from their normal one and thus have given a false picture of Swedish prisoners.

The unsupervised completion of the assessment instruments by many violent prisoner participants may have further limited the generalization of the findings to the larger offender population in Sweden. Although unsupervised completion may have convinced some participants about the confidentiality of their responses, some participants with reading difficulties may have declined. The criterion of proper knowledge of the Swedish language may have excluded potential prisoner participants who could not complete the assessment instruments without the help of an interpreter. The relatively high educational level of the sample of violent prisoners supports the speculations about these limitations. Furthermore, we had limited knowledge about the populations from which the participants came. Lindqvist et al. (2004) reported the limited accessibility of background characteristics of the prisoner participants for external research purposes. The three prisons had varying routines for generating population statistics for research purposes. We had extensive information regarding
the population of the Kumla prison (from where the majority of the violent prisoner participants came), the corresponding figures from the Norrtälje and Mariefred prisons were of more approximate character.

**External validity in the university student sample**

First and foremost it may be assumed that the size of the university student sample is humble. On the basis of considerations regarding practical and economical issues and the purposes of the work described in this thesis, the sample size was regarded as optimal. The authors of the studies of this thesis are aware of this limitation and have plans to increase the sample size of university students. The results of the university student sample may have been affected by the sampling routines of the Student Bureau of Stockholm University; the selection allowed for sampling only a relatively low percentage of the whole student population. The dropout rate among the contacted students represents a probable source of systematic error in the design. As students were properly informed regarding the items prior to data collection, those with unusually high and low levels of anger might have been overrepresented among those who declined. Sample selectivity may lay behind the non-normal distribution of some anger and aggression scales; students either could not find certain anger conditions relevant for them, or, as suggested by Håseth (1996), responded with a bias of social desirability. Other scales, for example the State Anger scale of STAXI-2-S, are usually non-normally distributed in a normal population: few participants feel themselves extremely agitated and combat oriented in a test situation. The culturally sensitive character of anger was suggested by the dropouts, many of whom may have felt uneasy about the research subject. Thus, the results have limited value when the aim is to generalize to the larger population of Swedish university students.

**Limitations of the design and statistical analyses**

The research purpose of comparing the factor structures of the adapted anger assessment instruments with their originals, respectively, may have facilitated the choice of confirmatory factor analyses (CFAs) instead of exploratory ones (EFAs). On the basis of practical considerations of the size of the university student sample and the availability of computer programs, we chose, however, to compute EFA. Also the results of EFA should be treated with caution. On the other hand, using variables on the aggregate or scale level may compensate for small sample sizes and enable successful EFAs. In Study I, EFAs of NAS-1998-S, PI-S, and STAXI-2-S were performed on the aggregate, (i.e., operational component, content category, subscale, and scale) level, not on the item level. These EFAs are valuable, in particular as their findings correspond with the factor structures of the original instruments (see NAS-1998-S and PI-S). Nevertheless, we are aware of the possible instability of such factor structures in larger samples. Similarly in the case of DFA (Study III), we are aware of the fact that our sample sizes and the amount of variables in the analysis may actualize the statistical problem of overfit (i.e., the accepted model fits so well the investigated sample and have limited applicability to other populations). We are also aware of the probability that the resulted DFA model may be unstable, and thus, may differ in analyses with other samples.
Furthermore, in the present thesis we chose not to assess test-retest reliability. There were multiple considerations behind this decision. First, the majority of the violent prisoners had been accessible for testing only for a short time, on average 38 days. This condition could implement a potential risk of dropout at the retest. An inefficiently short time interval between the test and retest occasions might, on the other hand, have jeopardized the validity of the data, as participants would have remembered their previous responses to the items and responded accordingly. Furthermore, during their initial, short phase of stay at the nation-wide assessment unit of Kumla prison, the participants had undergone multiple, psychological and psychiatric assessments, a condition that might have affected their motivation to participate on repeated occasions. Correspondingly, repeated administrations of tests might have affected the motivation of prison staff to cooperate with the authors. The large number of instruments to complete was the reason for the choice of a single test occasion also in the university student sample. The investigation of test-retest reliability will be addressed in our future research.

Regarding the findings of the sample comparisons between the Swedish and the American standardization samples of NAS-1998, PI, and STAXI-2 (Study III), the distributions of the American standardization samples may have influenced the T-values. Unfortunately, as the skewness and kurtosis values were not available in the manuals (Novaco, 2003; Spielberger, 1999), we had a limited opportunity to estimate the magnitude of this influence.

Despite their limitations in terms of size and representativity, the samples of this thesis may be regarded as interesting per se and, thus, worthy of investigation. Also, the authors of the studies of this thesis have taken steps to counteract some of the limitations. The anger scores and the low Inconsistent Responding Index of NAS-1998-S indicate successful data collection in the violent prisoner sample. The unsupervised, time-unlimited completion of the tests, and the pre-addressed envelopes, may have convinced the prisoners that they had nothing to lose in participating.

**Conclusion: the importance of the work described in this thesis**

*The phenomenon of anger*

Finally, it is now time to consider our initial question: is there anything new under the sun? Our answer is yes. Anger is an important, interesting, and passionate human emotion that has inspired and challenged humanity since ancient times. Anger represents a valuable signal of communication of personal, as well as social standards, on occasions when these are violated. Furthermore, anger may constitute a predictor variable of maladaptive phenomena: a significant activator of aggressive behavior and an important correlate of mental disorders. On the basis of *Theoretical Backgrounds* section, it may be concluded that many contemporary theoretical thoughts regarding anger may be traced to the days of Plato, Aristotle and Thomas Aquinas. Many classic ideas reoccur in the secular, modern sciences, and thus, may not be regarded as new.

What one may regard as new, is our effort of systematically investigating phenomena by means of standardized, scientific methodology. In that systematic manner of investigation, the psychometric assessment tradition may represent a
valuable contribution. Anger has been a neglected research phenomenon, which until recent days rarely emerged as the primary object of investigation.

The adaptation of anger instruments: theoretical and clinical benefits

On the basis of the above assumption, it may be postulated that the adaptation of psychometric, anger assessment instruments, as described in this thesis, has a vital importance for a variety of reasons. Reliable and valid psychometric assessment instruments are a prerequisite in the multiple efforts of screening and identifying anger problems, and designing, executing, and evaluating anger management programs. Psychometric anger assessment instruments may also have a direct relevance for the rehabilitation and clinical treatment of violent offenders. The originals of the adapted anger assessment instruments of this thesis have won increased international attention for superior psychometric properties, and illuminated the benefits of anger and aggression reducing therapeutic interventions for violent offenders. Consistently, the theoretical and assessment models of Novaco and Spielberger have been increasingly applied in research and in clinical work in both prison and forensic settings. They have also demonstrated accurate predictive validity regarding future offending and illuminated the benefits of anger in violence predicting models. Therefore, a crucial importance may be ascribed to the cross-cultural adaptation of these models.

The adaptation of a psychometric assessment instrument is, however, a demanding procedure. The main challenge is of a dual nature; on one hand, the adaptation should maintain an appropriate fit with the cultural and semantic context of the target language. An adaptation is not merely a translation; a well-crafted adaptation is like a bridge linking two different cultures, having a stable foot in each. The work described in this thesis has required considerable efforts with the purpose to achieve the appropriate quality of the adaptations. The adaptation of psychometric assessment instruments has great relevance for all researchers; although the psychometric properties of the Swedish versions will, hopefully, be of interest to Swedish researchers and clinicians, it is also useful for all researchers to know that a foreign language adaptation shows good psychometric properties, which provides some proof for the cross-cultural validity of the constructs being assessed.

The adaptation of psychometric assessment instruments has further relevance as the systematic assessment of anger has not yet reached high priority in the Swedish research and clinical context. There are no anger assessment instruments available in Sweden, according to the leading Swedish test publisher Psykologiförlaget AB. According to the authors of the original instruments, NAS, PI, and STAXI-2 have not previously been administered in samples in Sweden. The adaptation work described herein represents an important step toward the remedy of that circumstance.

The studies of this thesis were the first to introduce NAS-1998-S, PI-S and STAXI-2-S in samples in Sweden. In summary, the adapted anger assessment instruments NAS-1998-S, PI-S, and STAXI-2-S demonstrated indications of appropriate validity in the Swedish samples. Replication of the studies in this thesis and validation of the adapted anger instruments in larger community and clinical samples will be addressed by us in future research. Hopefully, the availability of the
adapted assessment instruments in the Swedish language will also stimulate the interest of other researchers in the clinical and assessment work on anger. Given the connotations of anger with a number of negative, individual and social outcome variables (see Introduction section), anger problems may threaten individual psychosocial well-being and interpersonal relationships. “Hot spurs” are out there and they may suffer from stable and long-term individual and social handicaps because of poor anger management in various stages of their lives. Convicted violent criminals may merely form the top of the proverbial iceberg; dysregulated anger may be the core problem in road rage, racial and sexual prejudices, workplace bullying, and domestic abuse as well. Even if not criminally charged or convicted, the anger in these men may be equally problematic as it brings about highly disruptive incidences, and causes harm to themselves and to their social relationships. Hopefully, the adapted anger assessment instruments will benefit them and therefore benefit us all.
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