THE RELATIONSHIPS BETWEEN THE ANTECEDENTS OF CHILDHOOD MALTREATMENT AND ADULT BORDERLINE PERSONALITY DISORDER

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Universitat Rovira i Virgili

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TESIS DOCTORAL

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Departament de Medicina i Cirurgia

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INSTITUT
PERE MATA
Àrea de Docència i Innovació

UNIVERSITAT ROVIRA I VIRGILI
FACULTAT DE MEDICINA I CIÈNCIES DE LA SALUT
DEPARTAMENT DE MEDICINA I CIRURGIA
AGRUPAMENT DE PSIQUIATRIA

HAGO CONSTAR que el presente trabajo, titulado "The relationships between the antecedents of childhood maltreatment and adult borderline personality disorder", que presenta Ana Hernández Fernández para la obtención del título de Doctor, ha sido realizado bajo mi dirección en el Departament de Medicina i Cirurgia de esta universidad y en el Hospital Universitari Psiquiàtric Institut Pere Mata y que cumple los requisitos para optar a Mención Europea.

Reus, 26 de Febrero de 2013

El director de la tesis doctoral, El codirector de la tesis doctoral,

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The child, for the full and harmonious development of his personality, needs love and understanding. He shall, wherever possible, grow up in the care and under the responsibility of his parents, and, in any case, in an atmosphere of affection and of moral and material security; a child of tender years shall not, save in exceptional circumstances, be separated from his mother. Society and the public authorities shall have the duty to extend particular care to children without a family and to those without adequate means of support.

Declaration of the Rights of the Child
Proclaimed by General Assembly Resolution 1386 (XIV) of 20 November 1959

El niño, para el pleno y armonioso desarrollo de su personalidad, necesita amor y comprensión. Siempre que sea posible, deberá crecer al amparo y bajo la responsabilidad de sus padres y, en todo caso, en un ambiente de afecto y de seguridad moral y material; salvo circunstancias excepcionales, no deberá separarse al niño de corta edad de su madre. La sociedad y las autoridades públicas tendrán la obligación de cuidar especialmente a los niños sin familia o que carezcan de medios adecuados de subsistencia.

Declaración de los Derechos del Niño
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Abstract

The Borderline Personality Disorder (BPD) is a pervasive and severe disorder with a long progression that requires large amounts of psychological and health resources to treat. Although there is no consensus about the etiological model of BPD, a combination of genetic and environmental variables is thought to increase the risk. Childhood maltreatment has been associated with adult psychological adjustment and psychological disorders and has shown a particularly strong association with BPD and a high prevalence among BPD patients.

For a long period, the effects of specific types of maltreatment (especially sexual and physical abuse) were examined without considering the co-occurrence of other childhood experiences, but it is impossible to separate the effects of each experience. Later, the focus moved to other experiences, such as neglect or emotional abuse, which are as pervasive as sexual abuse. Some studies have simultaneously examined the effects of different types of maltreatment on BPD; however, few of them simultaneously examined the effects of maltreatment and parenting style on BPD. The results of these studies are diverse, and each one has revealed different relationships between BPD and types of childhood experiences.

Because of the limitations on retrospective assessment of childhood maltreatment, it is necessary to assess relevant types of maltreatment using a reliable, valid, non-invasive instrument that is sensitive to the severity of maltreatment. The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein & Fink, 1998; Bernstein et al., 2003) assesses five widely accepted types of maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect (Bernstein & Fink, 1998; Sedlak et al., 2010). The simple and brief administration and the relative non-invasiveness of the instrument make it a good screening instrument for clinical and research purposes. Moreover, Likert-type responses allow the use of dimensional scales and severity cut-off points. Many studies have shown the validity, reliability, and stability of the English version of the CTQ-SF for assessing maltreatment memories. The CTQ-SF has been translated into more than 10 languages and adapted for different countries, retaining its good psychometric properties. Because of the strengths of the CTQ-SF and its strong performance in intercultural studies, we consider it necessary to translate, adapt, and provide initial reliability and validity data for the Spanish CTQ-SF[1].

The first aim of this work is to assess the reliability and validity of the Spanish CTQ-SF, and the second aim is to use the instrument to study the effects of each type of maltreatment on BPD using a dimensional approach and controlling for the co-occurrence of other adverse childhood experiences. The first study examines the internal consistency and factor structure of the Spanish version of the Childhood Trauma Questionnaire-Short Form (CTQ-SF) and the associations between the CTQ-SF subscales and parenting style. Cronbach's alpha and confirmatory factor analyses (CFA) were performed in a clinical sample of females (n=185).

[1] Childhood Trauma Questionnaire (CTQ): A Retrospective Self-Report. Copyright © 1998 NCS Pearson, Inc. Spanish (Spain) translation copyright © 2012 NCS Pearson, Inc. Translated, adapted, and reproduced translated with permission of publisher. All rights reserved.

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Abstract

Kendall's Tau correlations were calculated between the maltreatment and parenting scales in a subsample of 109 patients. The Spanish CTQ-SF showed adequate psychometric properties and the five-factor structure demonstrated a good fit to the data. The neglect and abuse scales were negatively associated with parental care and positively associated with the overprotection scale. The second study examines the relationship of different types of childhood maltreatment and perceived parenting style with BPD traits. Kendall's Tau partial correlations were performed, controlling for the effect of simultaneous adverse experiences and Axis I and II symptoms in a sample of 109 female patients (32 with BPD, 43 with other personality disorder and 34 without a personality disorder).

The results of the first study revealed adequate internal consistency reliability of the Spanish CTQ-SF and a good fit of the factor structure to the original version's five-factor model. The physical neglect scale had the lowest reliability coefficients and factor loadings in the CFA. The caring scale from the PBI was negatively correlated with CTQ-SF scales, especially emotional neglect. In general, the PBI overprotection scale was positively correlated with both emotional and physical abuse scales and emotional and physical neglect scales. The results of the second study support an association between emotional and sexual abuse and BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria. The results of the present study do not support a relationship between parenting style and BPD criteria above and beyond co-occurring childhood maltreatment or non-BPD PD criteria.

The results of the first study provide initial support for the reliability and validity of the Spanish CTQ-SF. The findings of the second study are consistent with previous research and help to clarify the effects of overlapping environmental factors that are associated with BPD.

Key terms: borderline personality disorder, childhood maltreatment, childhood abuse, childhood neglect, childhood trauma, parenting.

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Chapter 1

Introduction

Child Maltreatment

Concept and Types of Child Maltreatment

The definition of child maltreatment has not been consistent over time, and historical and cultural differences in the definition of both "childhood" and "maltreatment" have hindered a consensus. Currently, there is a lack of international agreement on the actions and conditions that constitute child maltreatment (European Network of National Observatories on Childhood, 2009).

The 1989 United Nations Convention on the Rights of the Child states that children must be protected from "all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s) or any other person who has the care of the child". Guided by this convention, Spanish legislation defines legal desertion in Civil Code Art. 172 as "a situation which is produced due to the failure to fulfill, or the impossible or inadequate use of rights of protection established by the law for the custody of children, when the latter are deprived of the necessary moral or material care" (Espanya & de San Pío, 2009).

Based on previous definitions, in 2006 the Spanish guide for detection, notification, and registration of child abuse cases defined child maltreatment as "a non-accidental action, or an omission of or negligent treatment, that deprives the child of his/her rights and welfare, and threatens and/or interferes with his/her ordered physical, psychological and/or social development, whose perpetrators could be people, institutions or society itself" (Childhood Observatory, 2001).

Different versions of the definition of child maltreatment emerge from different professional perspectives. Judicial, health and social services professionals produce their own definitions of child maltreatment based on the specific considerations of each professional field (European Network of National Observatories on Childhood, 2009; Inglès, Farràs, Rafel, & Sendra, 2000).

Differences in the number of different types of maltreatment and their definitions are also common. For example, del Valle and Bravo (2002) propose eight categories of child maltreatment: physical abuse, psychological abuse, physical neglect, psychological neglect, sexual abuse, sexual exploitation, labor exploitation and inducement to delinquency. In contrast, Inglès (1991) propose ten types of maltreatment: physical abuse, neglect, emotional abuse, sexual abuse, sexual exploitation, labor exploitation, corruption, forced drug use and Münchausen syndrome by proxy, prenatal abuse, and institutional abuse.

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The present study is focused on five types of maltreatment. Descriptions of these types of maltreatment from the English document *Working together to safeguard children* (HM Government, 2006) and the Spanish guide *Child abuse: detection, notification and registration of cases* (Childhood Observatory, 2001) are shown in Table 1.1.

Table 1.1. Child maltreatment types

Child abuse: detection, notification and registration of cases[1]	**Working together to safeguard children**[2]
Emotional abuse Any action capable of causing psychological or psychical clinical patterns by affecting a child's needs, taking into account the different stages of development and the characteristics of the child. Forms: rejecting, ignoring, terrorizing, isolating, corrupting and involving the child in anti-social behavior.	*Emotional abuse* The persistent emotional maltreatment of a child that causes severe and persistent adverse effects on the child's emotional development. It may involve conveying to children that they are worthless or unloved, inadequate, or valued only insofar as they meet the needs of another person. It may involve age innappropiate or developmentally inappropriate expectations being imposed on children. These may include interactions that are beyond the child's developmental capability, as well as overprotection and limitation of exploration and learning, or preventing the child from participating in normal social interactions. It may involve seeing or hearing the ill treatment of another. It may involve serious bullying, causing children to frequently feel frightened or in danger, or the exploiting or corrupting children. Some level of emotional abuse is involved in all types of maltreatment of a child, although it may occur alone.
Physical abuse Any non-accidental act that causes physical harm or illness to a child or places him/her in grave danger. Forms: skin wounds (ecchymosis, injuries, bruising, chafing, burns, bites, traumatic alopecia), fractures, shaking, mechanical suffocation, straining, intoxication, and Münchausen syndrome by Proxy.	*Physical abuse* Physical abuse may involve hitting, shaking, throwing, poisoning, burning or scalding, drowning, suffocating, or otherwise causing physical harm to a child. Physical harm may also be caused when a parent or caregiver fabricates the symptoms of, or deliberately induces, illness in a child.

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Table 1.1. Child maltreatment types (continued)

Child abuse: detection, notification and registration of cases[1]	**Working together to safeguard children**[2]
Sexual abuse Sexual abuse: involvement of children in sexual activities to satisfy the needs of an adult. Forms: - *With physical contact*: rape, incest, sodomy, pornography, child prostitution, touching, and sexual stimulation. - *Without physical contact*: indecent solicitation of a child or explicit verbal seduction, carrying out sexual acts or masturbation in the presence of a child, exposing sexual organs to a child, promoting child prostitution, and pornography.	*Sexual abuse* Sexual abuse involves forcing or enticing a child or young person to take part in sexual activities, including prostitution, whether or not the child is aware of what is happening. The activities may involve physical contact, including penetrative (e.g., rape, buggery or oral sex) or non-penetrative acts. They may include non-contact activities, such as involving children in looking at or producing online sexual images, watching sexual activities, or encouraging children to behave in sexually inappropriate ways.
Emotional neglect Failing to attend to the emotional needs of the child. Forms: lack of affection, not attending to the affective needs of a child (loving care, stability, security, stimulation, support, protection, family role, self-esteem, etc.), and pedagogical abuse. *Physical neglect* Neglecting the needs of a child and the duties of custody and protection or providing inadequate care for a child. Forms: neglect, abandonment, non-organic growth retardation, allowing children to become 'street children', consistently failing to bathe children, ignoring physical problems or medical needs or failing to provide routine medical care (vaccinations).	*Emotional and Physical neglect* The persistent failure to meet a child's basic physical and/or psychological needs, likely to resulting in the serious impairment of the child's health or development. Neglect may occur during pregnancy as a result of maternal substance abuse. Once a child is born, neglect may occur if a parent or caregiver fails to: - provide adequate food, clothing and shelter (including excluding the child from the home and abandonment); - protect a child from physical and emotional harm or danger; - ensure adequate supervision (including the use of inadequate care-givers); - ensure access to appropriate medical care or treatment. It may also include neglect of, or non-responsiveness to, a child's basic emotional needs.

[1] *Child abuse: detection, notification and registration of cases* (Childhood Observatory, 2001).
[2] *Working together to safeguard children* (HM Government, 2006).

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Prevalence and Incidence of Maltreatment

Estimating the prevalence and incidence of childhood maltreatment is a difficult task because of the invisible nature of the phenomena. The disclosed rates of child maltreatment are often compared with an iceberg there is a high prevalence of delay and nondisclosure of these experiences. For example, London, Bruck, Wright, and Ceci (2008) reviewed 13 studies about rates of disclosure and estimated that the proportion of childhood maltreatment cases that are disclosed ranged from 31% to 45%.

The Fourth National Incidence Study of Child Abuse and Neglect (NIS–4) (Sedlak et al., 2010) reported the incidence of child maltreatment in the USA in 2005-2006. Using the more stringent Harm Standard definition, the incidence of maltreatment was 17.1 per thousand. The incidence rates (per thousand) of each form of maltreatment were as follows: physical abuse, 4.4; sexual abuse, 1.8; emotional abuse, 2.0; physical neglect, 4.0; emotional neglect, 2.6; and educational neglect, 4.9. Using the more inclusive Endangerment Standard definition, the incidence of maltreatment was 39.5 per thousand in the USA in 2005-2006. The incidences rates (per thousand) of each form of maltreatment were as follows: physical abuse, 6.5; sexual abuse, 2.4; emotional abuse, 4.1; physical neglect, 16.2; emotional neglect, 15.9; and educational neglect, 4.9.

Taking into account the limitations on the detection of child maltreatment, Johnson, Cohen, Brown, Smailes, and Bernstein (1999) reported prevalence data obtained from both official data and self-report instruments. Johnson et al. (1999) conducted a longitudinal study of 639 families and reported a 4.9% prevalence of documented cases of childhood maltreatment (2.3% for physical abuse, 0.6% for sexual abuse, and 3.6% for neglect) and a prevalence of 9.1% for self-reported cases of childhood maltreatment (5.3% for physical abuse, 3.3% for sexual abuse, and 2.7% for neglect). Documented or self-reported cases of childhood maltreatment had occurred for 12.7% of the sample (physical abuse had occurred for 6.9%, sexual abuse for 3.4%, and neglect for 6.1%).

Studies using community samples also reported prevalence data on emotional, physical and sexual child abuse and emotional and physical child neglect (Briere & Elliott, 2003; Edwards, Holden, Felitti, & Anda, 2003; Green et al., 2010; MacMillan et al., 2001; Molnar, Buka, & Kessler, 2001; Paquette, Laporte, Bigras, & Zoccolillo, 2004; Pereda, Guilera, Forns, & Gómez-Benito, 2009; Scher, Forde, McQuaid, & Stein, 2004). The results of these studies reported that the prevalence of physical child abuse was between 13.9% and 21.2% for females and between 8.8% and 29.9% for males. The prevalence of emotional abuse was between 11.8% and 34.8% for females and between 8% and 33% for males. The prevalence of sexual abuse was between 7.5% and 32.3% for females and between 2.2% and 17.5% for males. The prevalence of emotional neglect was between 5.3% and 29.2% in females and between 4.9% and 32.5% in males. The prevalence of physical neglect was between 2.8% and 14.2% in females and between 3.5% and 22.1% in males.

Experiencing simultaneous forms of maltreatment during childhood is a common phenomenon. Some authors have called this phenomenon multi-type maltreatment (Higgins & McCabe, 2001) or poly-victimization (Turner, Finkelhor, & Ormrod, 2010). Edwards et al. (Edwards et al., 2003) reviewed 10 studies and found prevalence rates between 2.7% and 55% for experiencing multiple types of abuse. In a community based sample of 8667 adults, more than a half of the women who reported childhood sexual abuse also reported other forms of abuse; about half of the men who reported physical abuse also reported other forms of abuse (2003). Scher et al. (Scher et al., 2004) examined the prevalence of types of maltreatment and found that 13.5% of the sample met the criteria for more than one form of maltreatment. The most common co-occurring pairs of maltreatment were physical abuse and neglect (8.3%); emotional and physical abuse (8.3%); and the emotional abuse and the physical neglect (6.4%).

Prevalence and Incidence of Maltreatment in Spain

Saldaña et al. (1995) investigated the incidence of child maltreatment in a total of 32,483 child welfare case files opened in 1991-92 across regional Spanish administrative areas. The reported incidence of any form of maltreatment was 0.44 per thousand. Regional studies based on both child protection case files and cases of abuse identified by professionals working with children placed the prevalence of childhood maltreatment at 15 per thousand in Gipuzkoa; at 15 per thousand in Andalucía; and at 18 per thousand in Catalonia (De Paúl, Arruabarrena, Torres, & Muñoz, 1995; Inglès et al., 2000; Jiménez, Moreno, Oliva, Palacios, & Saldaña, 1995). In 2005, the incidence of childhood maltreatment within the family environment in Spain was 0.84 per thousand, and maltreatment was more frequent among females in all age groups. Child maltreatment was measured using official reports, and it was defined as physical, sexual or psychological aggression within the family environment for children under 18 years old (Centro Reina Sofía, 2005).

Pereda and Forns (2007) reported a prevalence rate of child sexual abuse of 17.9% in a sample of 1033 Spanish university students assessed retrospectively. The highest prevalence rate observed in the study was sexual abuse among females younger than 13 by an aggressor at least five years older (Pereda & Forns, 2007). Recently, a similar study reported that the prevalence of child sexual abuse was 12.5% in a sample of Spanish university students assessed retrospectively (Cortes, Duarte, & Canton-Cortes, 2011). The 2008 statistical bulletin about child welfare in Spain (Observatorio de la infancia, 2010) reported that 45432 case files were opened during the year; therefore, 5.74 children of every thousand in Spain were under some form of child protection in 2008.

Neurobiological Effects of Child Maltreatment

The neurobiological effects of child maltreatment have been linked to the mechanisms and circuits involved in stress responses. Comparisons and parallels between stress and maltreatment effects are common. For example, reviews of the neurobiological effects of child abuse and neglect usually include studies of populations with PTSD. However, generalizations from these results should be made carefully. Maltreatment, especially predictable and chronic abuse and neglect, is often not perceived by the child as a disruptive traumatic event (van der Kolk, 1994), and in these cases, the victims do not always show the typical symptoms of PTSD. The different types of adverse childhood experiences should be considered when interpreting their neurobiological effects. Isolated traumatic events, repeated events and patterns of interaction between an abuser and a child have been hypothesized to lead to different outcomes (Glaser, 2000). The type and frequency of the experience plus factors such as the child's individual characteristics and the family context could contribute to different outcomes and brain effects. Therefore, interpretation of the associations between child maltreatment and neurobiological impairment should consider the concepts of multifinality and equifinality. Multifinality assumes that the same experiences can lead to different outcomes, whereas equifinality assumes that different experiences lead to the same outcome.

Stress Response Systems

Various structures, mechanisms and hormones are involved in stress responses. The autonomic nervous system includes the sympathetic and parasympathetic systems, which are responsible for the immediate responses to stressors. In response to protracted stressors, the autonomic nervous system response (in combination with information from brain regions such as the amygdala and hippocampus) activates the hypothalamus-pituitary-adrenal (HPA) axis system, which initiates a hormonal cascade. First, the hypothalamus releases corticotrophine-releasing hormone (CRH), which stimulates the anterior pituitary gland to secrete adrenocorticotropin hormone (ACTH). ACTH acts on the adrenal cortex to synthesize and release glucocorticoid

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hormones (cortisol, in particular) that promote the mobilization of glucose and lipid stores. Glucocorticoids also regulate HPA activity and maintain homeostasis by providing negative feedback at the level of the hypothalamus, the pituitary gland, and the hippocampus. Several other regions, structures and pathways, such as areas of the cerebral cortex (prefrontal, orbitofrontal, anterior cingulated cortex) and white matter tracts (corpus callosum), are involved in stress responses (Glaser, 2000; McCrory, De Brito, & Viding, 2010).

Childhood Maltreatment and Neurobiological Effects

Several studies have examined HPA axis activity in children, adolescents and adults with a history of maltreatment, and they have reported mixed results. Reviews of these studies have reported ACTH hyperresponsiveness, cortisol suppression in situations of stress, and elevated basal cortisol levels. However, some studies reported no differences between the subjects who experienced maltreatment and those who did not. Several hypotheses have been proposed to explain these divergent results, such as the presence of comorbid affective disorders or differences in the adaptation pathways of the HPA axis in response to different forms of maltreatment (e.g., types of maltreatment, periods of onset, chronicity). Reviews of studies about the HPA axis conclude that there is evidence of a link between prolonged exposure to stress and the dysregulation of the HPA axis. However, it is still not clear how the dysregulation of the HPA axis mediates the relationship between a stressful experience and psychological outcomes (Glaser, 2000; McCrory et al., 2010).

Several studies have examined hippocampus volume in maltreated children, adolescents, and adults. These studies have consistently detected reduced hippocampal volume in adults, but no differences were detected in the samples of children and adolescents. Two hypotheses are proposed to explain these divergent results. The first suggests that the effect of stress on the hippocampus is gradual and is not discernible until adulthood. The second hypothesis suggests that hippocampal reduction is not a consequence of stress; it is a sign of vulnerability to ongoing PTSD in adulthood (McCrory et al., 2010; Teicher, Andersen, Polcari, Anderson, & Navalta, 2002). Studies of laterality and hemispheric integration have suggested that early maltreatment is associated with increased hemispheric laterality and decreased hemispheric integration. Decreases in corpus callosum volume in children and abnormalities in adults have also been observed (McCrory et al., 2010; Teicher et al., 2002). Cerebellum studies have consistently found decreased volume in children with a history of maltreatment. Prefrontal cortex studies in children with maltreatment-related PTSD compared to children who were not maltreated have reported mixed findings. These inconsistent results might be related to the differences in samples, types of maltreatment and methods across studies. Another possible explanation is that there are specific age windows of vulnerability (McCrory et al., 2010). Few studies have examined the differences in the structural cortex in adults who have experienced child maltreatment. Child maltreatment experiences are associated with reduced grey matter volume in the left dorsolateral and the right medial prefrontal cortex; reduced volume of the rostral anterior cingulated cortex; and reduction of grey matter volume in the left and right primary visual cortexes (McCrory et al., 2010; van Harmelen et al., 2010).

A functional study in adolescents with post-traumatic stress symptoms secondary to maltreatment showed correlations with decreased activation of the dorsolateral prefrontal cortex and with increased activation in the medial prefrontal cortex and anterior cingulated cortex (McCrory et al., 2010). Event-related potential research suggests that severely socially deprived children show a pattern of cortical hypoactivation when processing facial expressions. In contrast, some maltreated children allocate more resources and remain hyper-vigilant to angry faces (McCrory et al., 2010). The development of infant regulatory systems is also influenced by attachment and early parenting experiences (Newman, Harris, & Allen, 2011). Caregiving behaviors have been associated with the level of activity in frontal regions, which is related to social behavior and stress reactivity in infants (Hane & Fox, 2006).

Finally, Teicher et al. (2002; 2003) proposed two hypotheses to explain the link between early stress and structural and functional alterations in the brain. The initial hypothesis stated that early stress acts as a toxic agent and evokes a cascade of neurohumoral and neurotransmitter effects that results in impairment and alterations in the structure and function of the brain. After reframing and re-evaluating this initial hypothesis, Teicher et al. (2002; 2003) postulated that brain alterations represent an adaptive and alternative developmental pathway designed to adapt to high levels of life-long stress or deprivation. In this reframed hypothesis, exposure to high levels of stress hormones early in life leads to an alternative development pathway designed to help the individual adapt to high levels of stress. However, high levels of glucocorticoids are unnecessary and costly in a more benign environment; they are associated with an increased risk of disease and psychiatric disorders.

Child Maltreatment, Adult Psychological Adjustment and Psychological Disorders

As explained in the previous chapter, prolonged exposure to stress has been associated with neurobiological disruptions and vulnerability to physical and psychological disorders (Teicher et al., 2002). The effects of adverse childhood experiences on adult psychological adjustment have been widely investigated. The initial research focused on sexual abuse effects, but in recent decades, the focus has been expanded to other types of maltreatment, such as emotional abuse or neglect. Traditional studies often examined the effect of each type of maltreatment without considering that different types of maltreatment can occur simultaneously. These studies may attribute the effects of various types of maltreatment that are experienced simultaneously to a unique type of maltreatment (Clemmons, Walsh, DiLillo, & Messman-Moore, 2007; Higgins & McCabe, 2001). The common co-occurrence of different types of maltreatment has promoted new approaches during the last decade that consider multi-type maltreatment and poly-victimization effects.

Taking co-occurring adverse childhood experiences into account, child sexual abuse has been associated with mood, anxiety and substance abuse disorders (Molnar et al., 2001). Emotional neglect and physical and sexual abuse are related to DSM-III-R Axis I disorders and the perceived need for mental health care (Sareen, Fleisher, Cox, Hassard, & Stein, 2005). Childhood experiences of maladaptive family functioning have been associated with the earlier onset and persistence of mood, anxiety, conduct and substance abuse disorders (Green et al., 2010; McLaughlin et al., 2010). Self-reported sexual abuse and physical abuse have also been associated with posttraumatic symptoms and psychological sequelae (Briere & Elliott, 2003).

Additive Hypothesis

Some studies have examined the effects of multi-type maltreatment and found support for a dose-dependent relationship between the number of types of maltreatment experienced and psychological disturbances. The additive hypothesis proposes that experiencing various types of maltreatment is associated with greater problems of psychological adjustment than experiencing only one type of maltreatment (Higgins & McCabe, 2001). Supporting this idea, Higgins and McCabe (2000a; 2000b) found worse psychological adjustment in subjects exposed to a greater number of types of maltreatment. Edwards et al. (2003) reported a dose-dependent relationship between the number of types of maltreatment experienced and self-reported mental health scores, especially for those with emotionally abusive family environments. Similarly, multi-type maltreatment has also been associated with greater complexity of symptoms and a greater risk of adult sexual victimization (Briere, Kaltman, & Green, 2008; Messman-Moore & Brown, 2004).

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Maltreatment Severity

Some studies indicate that the additive effect hypothesis for maltreatment could be a masked effect of maltreatment severity; in other words, individuals who experienced more forms of maltreatment experienced more severe maltreatment (Schilling, Aseltine, & Gore, 2008). Maltreatment severity is an important aspect that should be considered because more severe abuse has a stronger relationship with adult psychiatric symptoms (Arnow, 2004). Recently, Green et al. (2010) noted the importance of assessing the severity and persistence of childhood adversities; both factors could explain the relationship between multi-type maltreatment and risk of life course disorders. Reports on clinical samples also showed a higher risk, an earlier onset and a recurrent course of depressive disorder associated with greater abuse severity (Bernet & Stein, 1999; Wise, Zierler, Krieger, & Harlow, 2001). Using an integrative strategy, Clemmons et al. (2007) examined the association between the severity and number of abuses and psychological functioning in a student sample. Although the number of types of abuses explained a greater proportion of the variance than abuse severity, when the effect was simultaneously examined, only abuse severity was significant. However, the results showed an interaction effect; the number of types of maltreatment only predicted symptomatology when adverse childhood experiences were especially severe.

Maltreatment Specificity

McMahon, Grant, Compas, Thurm, and Ey (2003) defined specificity as the notion that particular risk factors are uniquely related to particular outcomes. A few studies examined the specificity of the relationships between different types of maltreatment and psychological adjustment: some results support specific relationships (Briere & Runtz, 1990; Shanahan, Copeland, Costello, & Angold, 2008; Simeon, Guralnik, Schmeidler, Sirof, & Knutelska, 2001; M. O. Wright, Crawford, & Del Castillo, 2009); whereas others indicate a general and nonspecific relationship and support the equifinality of the maltreatment types (Green et al., 2010; McMahon et al., 2003). Higgins (2004) examined the degree and type of maltreatment in relation to psychological adjustment. Results showed that abuse severity, frequency and duration grouped subjects with more adjustment problems better than the type of abuse.

Adoptees and Twin Studies

Although some retrospective studies control for the effect of co-occurring types of maltreatment, other environmental variables are not controlled. For instance, adverse childhood experiences more often occur in disadvantaged environments or in families with poor functioning; therefore, the effects of adverse experiences are not disentangled from the effects of context. Adoptees and twin studies are designed to control for these co-occurring environmental variables.

Van der Vegt et al. (2009) followed a large sample of adoptees and reported (a) relationships between severe abuse and anxiety disorders; (b) relationships between neglect and abuse/dependence disorders; and (c) relationships between the number of adverse experiences in early childhood and anxiety, mood, and abuse/dependence disorders. Most of these relationships had a dose-response effect and were only significant for the most severe conditions. Twin studies examined twin pairs with only one twin exposed to abuse experiences. These studies showed a higher risk of psychiatric disorders for the twin exposed to sexual abuse in comparison with the non-exposed twin. The risk was higher in cases of severe sexual abuse (Kendler et al., 2000; Nelson et al., 2002).

Longitudinal Studies

One of the limitations of retrospective studies is the inability to demonstrate temporality (i.e., evidence that childhood maltreatment occurs before psychopathology), a basic aspect of causal

relationships. In comparison with retrospective studies, longitudinal research is capable of addressing the temporal criterion.

Some studies have prospectively examined the association between childhood maltreatment and adult psychopathology and reported evidence that (a) sexual abuse is a risk factor for posttraumatic stress disorder, depressive disorder, dysthymia, and suicidality; (b) physical abuse is a risk factor for posttraumatic stress disorder, depressive disorder, dysthymia, suicidality, disruptive symptoms, drug abuse and Cluster A and B disorders; and (c) neglect is a risk factor for posttraumatic stress disorder, depressive disorder, dysthymia, suicidality, disruptive symptoms, drug abuse and Cluster B disorders. The effect of multi-type maltreatment was also examined as a risk factor for major depressive disorder, and the results supported this association (J. Brown, Cohen, Johnson, & Smailes, 1999; Cohen, Brown, & Smaile, 2001; Horwitz, Widom, McLaughlin, & White, 2001; Widom, 1999; Widom, DuMont, & Czaja, 2007).

Despite the fact that longitudinal studies address the temporality limitation, there are other methodological limitations that make it difficult to ensure that observed associations are causal relationships (Cohen et al., 2001). First, the co-occurrence of other adverse childhood experiences (e.g., stressful life events or an adverse family environment) can mask the relationship between maltreatment and adult psychopathology (Horwitz et al., 2001). Second, because of the ethical limitations that Cohen et al. (2001) exposed, most of these studies assess maltreatment experiences using only official records. Therefore, sampling is limited to visible cases of maltreatment, which only represent a portion of the phenomena. The disclosure of maltreatment during childhood and the intervention of child welfare services can involve differences between reported and invisible cases. As Foynes, Freyd, and Deprince (2009) stated, nondisclosure can allow abuse to continue, prevent treatment, exacerbate stress, and increase vulnerability to negative mental health outcomes. However, disclosure can lead to psychological distress when victims have little social support or when disclosure implies negative feedback (McNulty & Wardle, 1994).

Another limitation of some longitudinal studies is the lack of control for maltreatment experiences that are not officially registered in the control group (Horwitz et al., 2001; Widom, 1999; Widom et al., 2007). The high prevalence of nondisclosure implies that some subjects from the control group are likely to have experienced childhood maltreatment. Therefore, associations between the risk factor and the outcome can be underestimated.

Attachment Patterns and Child Maltreatment

Attachment refers to the group of behaviors designed to promote proximity to caregiving adults and attachment figures in times of stress. Human infants develop attachment over the first 2 to 3 years of life. Different patterns of attachment have been described in the literature. In the past, attachment was commonly classified as secure or insecure (avoidant, resistant, and disorganized). Recently, attachment has been classified as organized (secure, avoidant, and resistant) or disorganized (Zeanah, Keyes, & Settles, 2003).

Attachment between caretakers and children is related to psychosocial functioning in childhood and into adulthood (Haskett & Willoughby, 2007; Koenig, Ialongo, Wagner, Poduska, & Kellam, 2002; Smith, 2004). Insecure attachment is related to emotional dysregulation in children and psychological disturbances in adults (Briere & Jordan, 2009). In contrast, adverse early relationships often produce attachment insecurity (Briere & Jordan, 2009; Higgins & McCabe, 2003). Adverse childhood events often occur in the context of a variety of negative social, familial, and neurobiological factors. In this context, child maltreatment may disrupt normal attachment and thus exacerbate the effects of maltreatment. Consequently, symptoms related to maltreatment reflect the interplay between complex, interdependent, and interactive

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factors. Briere and Jordan (2009) propose more ecologically valid studies that simultaneously examine relevant variables using multivariate statistical methods.

A review of attachment in samples of maltreated individuals found that significantly more maltreated infants displayed insecure attachments compared with control children. On average, 76% of maltreated infants had an insecure attachment style compared with 34% of controls (Morton & Browne, 1998). Attachment theory predicts that insensitive caregiving leads to insecure attachment, but some studies found that some maltreated infants had secure patterns of attachment. The finding that some maltreated infants have a secure style can be better explained using the organized/disorganized classification. Infants in the disorganized category of attachment show an unusual combination of high levels of both avoidance and resistance combined with proximity seeking and contact maintenance. These infants seem to lack organized strategies for dealing with stress and display bizarre behaviors, such as incomplete, undirected, and uninterrupted movements and expressions; stillness adn slow movements; and asymmetrical and mistimed movements. Using the organized/disorganized classification, 82% of the maltreated infants were classified as disorganized, 4% as insecure and 14% as secure (Morton & Browne, 1998).

Methods and Limitations on Retrospective Child Maltreatment Assessment

The growing interest in the study of childhood maltreatment in clinical and nonclinical samples and the relevance of the issue correspond to both the high frequency of these experiences and their pervasive effects on psychological adjustment (Briere & Elliott, 2003; Cohen et al., 2001; Widom et al., 2007). The assessment of adverse childhood experiences has been a major topic of research and is still under discussion. There are different ways to assess childhood maltreatment, each of which has several limitations. The strategy used most commonly in epidemiological and longitudinal studies is to collect data from official organizations, such as the police, hospitals, schools or child welfare services. This strategy has the major drawback that childhood maltreatment is mostly invisible, which means that most of the cases of maltreatment are not disclosed and reported. The victim usually feels embarrassed and guilty, and sometimes the secret is revealed only to the closest family members after the passage of time. A review about child abuse disclosure reported that between 55% and 69% of adults never told anyone about sexual abuse during childhood (London et al., 2008).

The invisible nature of the phenomena does not only affect the detection of maltreatment; for example, long-term effects can be more pervasive for non-detected survivors. Adult adjustment and other long-term effects may be different for the individuals whose abuse was reported and who received a psychological intervention compared with the individuals whose abuse was kept secret over time. In summary, nondisclosure can allow abuse to continue and increase vulnerability to negative mental health outcomes (Foynes et al., 2009).

Retrospective studies with adolescents and adults overcome the limitation of officially undetected cases by using retrospective assessment instruments of childhood maltreatment memories. Some authors have found that confidential self-report questionnaires, compared with interviews, are a preferable method for assessing sensitive information and result in less-restrained responses and higher levels of disclosure (Durrett, Trull, & Silk, 2004). Nevertheless, retrospective assessments are affected by limitations such as recall bias or the inability to demonstrate that maltreatment occurred earlier in time than the outcome (Ball & Links, 2009).

The accuracy of memories of past events has been considered the main limitation of retrospective methods. Information about abuse history can be forgotten, withheld, or redefined as abusive or non-abusive. Several factors could account for these changes over long time

spans: processing trauma in psychotherapy; discussing trauma with family members and relatives; emotional reactions to socially taboo questions; mood at the time of the retrospective reporting; self-blame, minimization, denial, and "selective forgetting"; and other recall biases.

All of these factors should be considered, but research on the validity and reliability of retrospective self-reports is encouraging. A life course study of chronic adult depression failed to reveal evidence of significant bias in the collection of information about parental maltreatment. However, there was some evidence of underreporting (G. W. Brown, Craig, Harris, Handley, & Harvey, 2007). Other studies reported a substantial rate of false negatives, whereas false positive reports were rare (Hardt & Rutter, 2004). Test-retest reliability studies suggest moderate to good coefficients for the retrospective assessment of most childhood experiences, indicating that they are generally stable over time (Dube, Williamson, Thompson, Felitti, & Anda, 2004; Durrett et al., 2004; Hardt, Sidor, Bracko, & Egle, 2006; Nelson, Lynskey, Heath, Madden, & Martin, 2010).

Reports of abuse and neglect also remained stable before and after therapy. Paivio et al. (2001) noted that stability in the context of treatment, despite substantial post-treatment changes in mood, reductions in symptomatology, and shifts in the subjective meaning of these childhood experiences, can be taken as additional evidence supporting the accuracy of retrospective self-reports of child abuse. In a sample of individuals with BPD, the mean number of sexual, physical and emotional traumatic childhood memories reported before and after long-term intensive psychotherapy for BPD was also stable. Inconsistencies in memory were not related to the type of treatment or changes in suppression, intrusions, avoidance of intrusions, dissociative symptoms, depressive symptoms, and borderline symptoms. The results suggested that patients with BPD are not more susceptible to making inaccurate reports (Kremers, Van Giezen, Van, Van Dyck, & Spinhoven, 2007).

Assessment of Childhood Trauma in Adults

Several instruments have been developed to assess memories of childhood maltreatment. Roy and Perry (2004) reviewed the instruments produced from 1985 to March 2003 for assessing childhood trauma in adults. The review included 21 observer-rated and 21 self-report instruments. The reviewers compared the characteristics of the instruments, such as the administration format (interview/questionnaire), the types of trauma assessed, the parameters used to quantify the trauma, childhood age range, the duration of administration, and psychometric properties. Among the 21 observer-rated instruments, only three measured a single type of trauma; nine instruments reported psychometric properties, and four reported validity data. Among the 21 self-report instruments, seven measured a single type of trauma; eleven instruments reported psychometric properties, and four reported validity data.

A recent review about the retrospective assessment of childhood trauma included a search of the literature from 1950 to May 2009. The review included 59 studies, and after applying the exclusion criteria, 19 instruments were compared: 13 self-report instruments and 6 semi-structured interview instruments (Pietrini, Lelli, Verardi, Silvestri, & Faravelli, 2010). The researchers compared the characteristics of the instruments, such as administration format, the number of items, the duration of administration, the recording of the results, and the type of maltreatment assessed. Pietrini et al. (2010) considered five types of trauma: neglect, loss, separation, physical abuse, and sexual abuse. However, emotional abuse and emotional neglect were not considered in the analyses. Among the 19 studies, only 8 reported validity data. The four most commonly used instruments in clinical and epidemiological practice appeared to be the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), the Adult Attachment Instrument (AAI; George, Kaplan, & Main, 1985), the Childhood Experience of Care and Abuse questionnaire (CECA-Q; Bifulco, Bernazzani, Moran, & Jacobs, 2005), and the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994; Bernstein & Fink, 1998).

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Considering the results of both reviews, only 5 self-report instruments and 3 interviews assessed several types of maltreatment and reported psychometric and validity data. The Interview for Traumatic Events in Childhood (ITEC; Lobbestael, Arntz, Harkema-Schouten, & Bernstein, 2009) is a recent instrument for assessing childhood maltreatment that had good psychometric properties. The characteristics of these instruments are shown in Table 1.2.

Table 1.2. Interviews and Self-Reported Instruments

Title	Admin. Format	Scales / Type of trauma assessed	Assessment Parameters
AEnv-III (Berger, Knutson, Mehm, & Perkins, 1988)	Self-Report	Childhood experiences, personal attitudes and perceptions	Yes/No. 164 items.
CATS (Sanders & Becker-Lausen, 1995)	Self-Report	Physical abuse Sexual abuse Negative home environment	5-point Likert scale. 38 items.
CECA-Q (Bifulco et al., 2005)	Self-Report	Physical abuse Sexual abuse Lack of parental care	Parental care: 5-point Likert scale Physical and sexual abuse: Yes/No followed by questions to determine characteristics of maltreatment. 20-33 items.
CTQ-SF (Bernstein & Fink, 1998; Bernstein et al., 2003)	Self-Report	Physical abuse Sexual abuse Emotional abuse Physical neglect Emotional neglect Minimization/denial	5-point Likert scale. 28 items.
ETI-SR (Bremner, Bolus, & Mayer, 2007; Plaza et al., 2011)	Self-Report	General trauma Physical abuse Emotional abuse Sexual abuse	Yes/No; if yes questions are asked to determine the characteristics of maltreatment. 62 items (short form: 27 items).
CECA (Bifulco, Brown, & Harris, 1994)	Interview	Neglect Antipathy Physical abuse Sexual abuse Other adverse childhood experiences	Most items use a 4-point Likert scale. Questions to determine the characteristics of maltreatment. > 1 hour.
CTI (Fink, Bernstein, Handelsman, Foote, & Lovejoy, 1995)	Interview	Separation/loss Physical neglect Emotional abuse Physical abuse Witnessing violence Sexual abuse	Semi-structured questions with a 7-point severity scale and questions to determine the characteristics of maltreatment. 20-30 minutes.
ETI (Bremner, Vermetten, & Mazure, 2000)	Interview	General trauma Physical abuse Emotional abuse Sexual abuse	Open-ended questions and 56 structured questions. Yes/No, 7-point Likert scale and questions to determine the characteristics of maltreatment. 45 minutes.
ITEC (Lobbestael et al., 2009)	Interview	Physical abuse Sexual abuse Emotional abuse Physical neglect Emotional neglect	Semi-structured questions, Likert type scales and questions to determine the characteristics of maltreatment. 20-30 minutes.

There is no consensus about whether a questionnaire or an interview is preferred for assessing childhood maltreatment memories. Questionnaires are preferred for their less invasive format, their shorter administration time, and their ability to reduce false negative reports, but interviews are preferred for the qualitative information recollected and the possibility of clarifying answers. The best instrument depends on the purpose of the assessment and various research considerations: the types of maltreatment that must be assessed, interest in quantitative or qualitative data, the time available, and the use of cutoff points. However, the reliability and validity data about the instrument should also be taken into account. For the present study, the CTQ-SF was selected. A description of the characteristics of this test can be found in the next section. The reasons for selecting the CTQ-SF are described in the "Justification for Study 1" section.

The Childhood Trauma Questionnaire - Short Form

The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein & Fink, 1998; Bernstein et al., 2003) is the gold standard instrument for the retrospective self-assessment of childhood maltreatment, and it meets most of the requirements proposed by Gerdner and Allgulander (2009): reliability and validity; easy, ethical and non-intrusive administration; conceptual validity; inclusion of relevant types of maltreatment; and sensitivity to maltreatment severity.

Description of the Test

The CTQ-SF is a 28-item retrospective self-report instrument for adults and adolescents to assess five types of maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Each scale is represented with five items scored on a 5-point Likert-type scale: *never true, rarely true, sometimes true, often true*, and *very often true.* Three additional items compose the minimization/denial scale for detecting socially desirable responses or false-negative trauma reports.

Table 1.3. CTQ-SF Scales

Scale	Description
Emotional abuse[a]	Verbal assaults on a child's sense of worth or well-being, or any humiliating, demeaning, or threatening behavior.
Physical abuse[a]	Bodily assaults that pose a risk of, or result in, injury.
Sexual abuse[a]	Sexual contact or conduct, frequently but not necessary with coercion.
Emotional neglect[b]	Failure to meet psychological and emotional needs, such as love, encouragement, belonging, and support.
Physical neglect[b]	Failure to meet physical needs, such as food, shelter, safety, supervision or health.
Minimization/denial scale	Identifies tendency to give socially desirable responses.

[a]Behaviors directed toward a child by an older person.
[b]Failure of caretakers to meet a child's basic needs.

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The items on the CTQ-SF are based on the definitions of child abuse and neglect in the literature and a review of extant trauma instruments. The CTQ-SF abuse scales are defined in the CTQ manual as behaviors directed toward a child by an older person, and the neglect scales reflect a failure of caretakers to meet a child's basic needs. Table 1.3 summarizes the descriptions of the abuse and neglect scales on the CTQ.

Development of the CTQ-SF

Bernstein et al. (1994) selected 70 items for the first version of the CTQ. The first version showed high internal consistency, good test-retest reliability, good convergent and discriminant validity, satisfactory specificity and good sensitivity. Based on the results from factor analyses of the original 70-item version, Bernstein et al. produced a 28-item version (Bernstein et al., 2003). This shorter version included five items from each of the five factors. The most reliable items with high loadings into their factors and low overlap with the other factors were retained.

Reliability

The psychometric characteristics of the CTQ-SF have been examined in samples of adult patients with substance abuse problems (n=378), adolescent psychiatric inpatients (n=396), adult substance abusers (n=625) and a normative community sample of adults (n=579). Cronbach's alpha coefficients for the CTQ-SF scales ranged from .84 to .89 for emotional abuse, from .81 to .86 for physical abuse, from .92 to .95 for sexual abuse, from .85 to .91 for emotional neglect, and from .61 to .78 for physical neglect (Bernstein et al., 2003). In comparison with the original version, the German, French, Swedish and Dutch versions of the CTQ-SF showed similar internal consistency values. Cronbach's alpha coefficients were satisfactory for emotional neglect, physical, sexual and emotional abuse and lower for physical neglect (Gerdner & Allgulander, 2009; Paquette et al., 2004; Thombs, Bernstein, Lobbestael, & Arntz, 2009; Wingenfeld et al., 2010).

The test-retest reliability of the CTQ-SF was examined in a sample of 40 outpatients taking methadone after a test interval between 1.6 and 5.6 months. The intraclass correlations between the administrations were high for all the scales: r=.80 for emotional abuse, r=.80 for physical abuse, r=.81 for sexual abuse, r=.81 for emotional neglect, and r=.79 for physical neglect (Bernstein & Fink, 1998).

Factor Validity

The five-factor structure of the CTQ-SF was maintained across clinical and non-referred samples. Confirmatory factor analyses indicated a good or acceptable fit of the five-factor model (CFI > .90; S-B χ^2/df < 2; RMSEA < .07) (Bernstein et al., 2003). The CTQ-SF five-factor structure has also been replicated in the German, French and Dutch versions and in a large community sample (Paquette et al., 2004; Scher, Stein, Asmundson, McCreary, & Forde, 2001; Thombs et al., 2009; Wingenfeld et al., 2010). However, the results of an exploratory factor analysis of the Swedish version and the CFA results in a male student sample did not support the structure of the physical neglect subscale (Gerdner & Allgulander, 2009; K. D. Wright et al., 2001).

Criterion, Concurrent and Convergent Validity

The validity of the CTQ-SF has been supported by independent corroborative data from childhood maltreatment interviews as well as information from referring clinicians and agencies and the reports of other informants (Bernstein & Fink, 1998; Bernstein et al., 2003; Lobbestael et al., 2009). The CTQ scores also satisfactorily discriminated between clinical and non-clinical samples (Bernstein & Fink, 1998; Gerdner & Allgulander, 2009; Thombs et al., 2009).

Bernstein and Fink (1998) reported significant correlations between the CTQ-SF scales and self-reported measures of common traumatic sequelae, such as depression, posttraumatic stress disorder, dissociation or alexithymia. Substance abuse disorders are associated with childhood maltreatment experiences (MacMillan et al., 2001; Molnar et al., 2001) and are consistently associated with the CTQ scales (Bernstein, Stein, & Handelsman, 1998; Lundgren, Gerdner, & Lundqvist, 2002; Medrano, Desmond, Zule, & Hatch, 1999).

Some studies have examined the relationships between memories of childhood maltreatment and adults' memories of their parents' parenting styles. Because parenting and maltreatment are similar but not identical constructs, correlations between them provide a good measure of the CTQ-SF's discriminant and convergent validity. A standard instrument often used to assess retrospective parenting style is the Parental Bonding Instrument (PBI; Parker et al., 1979), which measures perceived maternal and paternal care and overprotection. In this instrument, parental care is a bipolar dimension ranging from parental warmth, affection, involvement and empathy to parental coldness, rejection, detachment, indifference, and aloofness. The overprotection dimension ranges from psychological control, infringement, imposition, intrusiveness and infantilization to the detached promotion of independence, autonomy and self-sufficiency.

Finzi-Dottan and Karu (2006) examined the relationships between the emotional abuse CTQ-SF scale and the care and overprotection PBI scales in an undergraduate sample. Emotional abuse was positively related to paternal and maternal overprotection, whereas paternal and maternal care were negatively correlated with emotional abuse. The total score on the CTQ-SF was also associated with the PBI scales in an adult sample with and without child maltreatment experiences; there was an inverse relationship with the care scale and a positive relationship with the overprotection scale (Rikhye et al., 2008). Seganfredo et al. (2009) examined the relationship between the PBI and the CTQ-SF scales in a sample of patients with panic disorder and control subjects. The results showed that the risk of maltreatment, especially emotional neglect and emotional abuse, decreased with higher scores for maternal and paternal care, whereas the maltreatment risk increased with higher overprotectiveness and authoritarianism. Only the risk of sexual abuse neither increased nor decreased with the PBI scales. In a sample of outpatients with depression and anxiety, sexual abuse was not related to any PBI scale (McGinn, Cukor, & Sanderson, 2005). In this study, the parental and maternal care scales were negatively related to emotional abuse and neglect. Except for maternal overprotection, which was positively related to emotional and physical abuse, the overprotection scale was not significantly related to the CTQ-SF scales (McGinn et al., 2005). In summary, the results of the studies that examined the relationships between the CTQ-SF and the PBI showed that the CTQ-SF scales were negatively associated with parental care and positively associated with parental overprotection. There was an especially strong association between emotional neglect and parental care, whereas sexual abuse was not associated with any PBI scale.

CTQ-SF Cutoff Points

The scores on the CTQ-SF scales can be influenced by the severity, frequency or duration of maltreatment. Various severity cutoff points are available for the CTQ-SF (Bernstein & Fink, 1998). The sensitivity and specificity for each type of maltreatment were calculated based on ROC analyses in a sample of female members of a health maintenance organization. For each CTQ-SF scale, three severity cutoff points were selected. The thresholds for detecting low-severity maltreatment cases showed sensitivity between 79% and 89% and specificity between 82% and 86%. Moderate-severity thresholds showed specificity of at least 95% and sensitivity from 49% to 72%. Severe maltreatment cases were captured using thresholds with specificity of at least 98% and sensitivity lower than 50%. More or less restrictive cutoff points can be used to reduce false-positive or false-negative results (Bernstein & Fink, 1998).

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Borderline Personality Disorder

Definition of Borderline Personality Disorder

Borderline personality disorder (BPD) is characterized by the American Psychiatric Association as "a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity that begins by early adulthood and is present in a variety of contexts" (American Psychiatric Association, 2000).

The clinical signs of BPD include (1) affective symptoms such as emotional dysregulation, fast and intense reactivity to dysphoric mood states, difficulty controlling anger, and chronic feelings of emptiness; (2) behavioral symptoms such as impulsive aggression, substance abuse, repeated self-injury and suicidal behavior; (3) cognitive symptoms such as stress-related paranoid ideation, severe dissociative symptoms and identity disturbance; and (4) interpersonal symptoms such as unstable and intense interpersonal relationships and frantic efforts to avoid real or imagined abandonment.

Epidemiology of Borderline Personality Disorder

The estimated prevalence of BPD is 2% in the general population. BPD is more frequently diagnosed in women; the diagnosis ratio is 3 women for every man. The incidence of BPD is 10% in psychiatric outpatient samples and 20% in psychiatric inpatient samples (American Psychiatric Association, 2000). A recent epidemiological study, in a psychiatric emergency service in a tertiary hospital in Spain, reported BPD diagnosis in 9% of the visits to the emergency department. Of these visits, 11% required hospitalization (Pascual et al., 2007). The rate of mortality by suicide ranges from 8-10% for BPD patients (American Psychiatric Association, 2000).

Brief History and Evolution of Borderline Personality Disorder

The purpose of this section is briefly summarize the evolution of BPD as a concept. An exhaustive historic review of the borderline personality can be found in Millon and Davis (Millon, Davis, & Millon, 1998; Millon & Davis, 2001). The first references to borderline symptoms are linked to Greek and Roman descriptions of the co-occurrence of euphoria, irritability and depressive symptoms in the same patient. Similarities between BPD and bipolar disorders make it difficult to separate the initial history of BPD from bipolar disorders.

During the last century, some authors studied and described the core features of the borderline personality: emotional oscillations, irritability, sadness and suicide cognitions. Kraepelin, for example, named these symptoms the "excitable personality", and Schneider labeled them as the "labile" personality (Kraepelin, 1921; Schneider, 1950). Stern (1938), taking a psychoanalytic perspective, was the first to use the term borderline to reflect the position of these patients. Borderline patients were considered to be those between neuroses and psychoses syndromes who were difficult to diagnose and showed little response to treatment. Later, other authors continued using the term borderline to describe the core traits of BPD core (Jacobson, 1953; Schmideberg, 1959; Wolberg, 1952).

The first empirical research on BPD was published by Grinker, Werble, and Drye (1968). These authors reported four subtypes of BPD and four core traits: identity disturbance, depressive

symptoms related to loneliness, anger as a common mood state, and disturbed affective relationships.

BPD has been described from different points of view. Most of these explanations are not incompatible, and integrating them could more accurately capture the complexity of the disorder. Contributions based on different approaches are listed below.

- Kernberg (1967; 1975; 1980; 1984) described the borderline personality from the psychodynamic perspective and proposed three core features: impaired ego integration, primitive defenses, and poor impulse control. Based on psychoanalyses, Stone (1980; 1985; 1993) proposed vulnerability to affective disorders and history of parental abuse as risk factors for BPD.
- From a biological point of view, Akiskal et al. (1977) considered BPD an affective disorder similar to bipolar disorder, and Siever and Davis (1991) proposed a neurotransmitter theory involving the combination of low serotonin and high noradrenaline.
- From an interpersonal viewpoint, Benjamin (1996) proposed four factors in the development of BPD: family chaos, abandonment, restraint from independence, and affection and caring behaviors attached only to feelings of distress.
- Paris (1994) and Millon (1987; 1990) reported that social factors such as low social support and low social control were risk factors for BPD because they provided less protection against parental maltreatment. Kroll stated that BPD is a disorder similar to post-traumatic stress disorder, based on the high frequency of adverse childhood experiences among BPD patients.
- Zanarini (1993) considered BPD to be an impulse control disorder and developed a specific interview to assess the four typical disturbed areas in BPD patients: affective symptoms, cognitive impairment, impulsive behaviors, and disturbed interpersonal relationships.
- Beck, Freeman and Pretzer proposed that the BPD was based on dichotomous thinking and dysfunctional beliefs about the world, oneself and the future (Beck, 1995).
- Finally, Linehan (1993) conceived BPD as a combination of emotional vulnerability and impaired affective regulation in an emotionally invalidating environment.

An integrative model of BPD incorporating different approaches should include core features (such as primitive defenses, low impulse control, dysfunctional beliefs, and emotional vulnerability) and risk factors (such as family history of affective disorders, adverse childhood experiences, and disruption of the family environment).

Borderline Personality Disorder Diagnostic Criteria

Based on Millon's proposal (Millon et al., 1998) and taking descriptions from other clinical experts in BPD into account, DSM-III (American Psychiatric Association, 1980) included "Borderline Personality" as a syndrome for the first time. The next revision of the manual, DSM-III-R (American Psychiatric Association, 1987), contained no essential changes in the BPD criteria. The DSM-IV added a new cognitive criterion: stress-related paranoid ideation or dissociative symptoms. The DSM-IV-TR criteria for a BPD diagnosis are shown in Table 1.4.

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Table 1.4. DSM-IV-TR and ICD-10 criteria for BPD

DSM-IV-TR[1]	ICD-10[2]
A pervasive pattern of instability of interpersonal relationships, self-image and affects, as well as marked impulsivity, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:	**Impulsive type** *At least three of the following must be present, one of which must be (2):*
1. Frantic efforts to avoid real or imagined abandonment. Note: Do not include suicidal or self-injuring behavior covered in Criterion 5.	1. Marked tendency to act unexpectedly and without consideration of the consequences.
2. A pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation.	2. Marked tendency to quarrelsome behavior and to conflicts with others, especially when impulsive acts are thwarted or criticized.
3. Identity disturbance: markedly and persistently unstable self-image or sense of self.	3. Liability to outbursts of anger or violence, with inability to control the resulting behavioral explosions.
4. Impulsivity in at least two areas that are potentially self-damaging (e.g., promiscuous sex, eating disorders, binge eating, substance abuse, reckless driving). Note: Do not include suicidal or self-injuring behavior covered in Criterion 5.	4. Difficulty in maintaining any course of action that offers no immediate reward.
5. Recurrent suicidal behavior, gestures, threats or self-injuring behavior such as cutting, interfering with the healing of scars (excoriation) or picking at oneself.	5. Unstable and capricious mood.
6. Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability or anxiety usually lasting a few hours and only rarely more than a few days).	**Borderline type** *At least three of the symptoms mentioned in Impulsive type must be present [see above], with at least two of the following in addition:*
7. Chronic feelings of emptiness	1. Disturbances in and uncertainty about self-image, aims, and internal preferences (including sexual).
8. Inappropriate anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).	2. Liability to become involved in intense and unstable relationships, often leading to emotional crisis.
9. Transient, stress-related paranoid ideation, delusions or severe dissociative symptoms	3. Excessive efforts to avoid abandonment. 4. Recurrent threats or acts of self-harm. 5. Chronic feelings of emptiness.

[1](American Psychiatric Association, 2000)
[2](World Health Organization, 1992)

BPD disorder in the DSM-IV-TR is labeled "emotionally unstable personality disorder" by the ICD-10 (World Health Organization, 1992). It is characterized as "a definite tendency to act impulsively and without consideration of the consequences; the mood is unpredictable and capricious. There is a liability to outbursts of emotion and incapacity to control the behavioral explosions. There is a tendency to quarrelsome behavior and to conflicts with others, especially when impulsive acts are thwarted or censored." The ICD-10 identifies two subtypes of emotionally unstable personality disorder. The criteria for both impulsive and borderline types are shown in Table 1.4.

The factor structure of the diagnostic criteria for BPD has been analyzed in various studies. Sanislow et al. (2002) studied the latent factorial structure of the DSM-IV-TR BPD criteria and reported three factors: affective dysregulation, behavioral dysregulation, and disturbed relatedness. The affective dysregulation factor included affective instability, inappropriate anger, and avoidance of abandonment criteria. The behavioral dysregulation factor included impulsivity in at least two areas and suicidal or self-mutilating behavior. The disturbed relatedness factor included unstable relationships, identity disturbance, a chronic feeling of emptiness, and stress-related paranoid ideation.

The recovery rates and stability of BPD have been studied in 10-year and 16-year prospective follow-up studies (Choi-Kain, Zanarini, Frankenburg, Fitzmaurice, & Reich, 2010; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010; Zanarini, Frankenburg, Reich, & Fitzmaurice, 2012). The results from the 10-year study period suggested that the behavioral interpersonal features of BPD remit rapidly, while the core affective features related to intolerance of aloneness and conflicts over dependency are more persistent. The results also suggested that recovery from BPD seemed difficult. However, once attained, recovery was relatively stable over time (Choi-Kain et al., 2010; Zanarini et al., 2010). The 16-year follow-up assessment supported these results (Zanarini et al., 2012). Sustained symptomatic remission was more common than sustained recovery from BPD. Remissions and recoveries were more difficult to attain and maintain for individuals with BPD than for individuals with other personality disorders (Zanarini et al., 2012).

Dimensional Models of Borderline Personality Disorder

The categorical approach to BPD has been described as controversial and problematic. The diagnostic categories and the current diagnostic manuals for mental disorders (DSM-IV-TR and CIE-10) code personality disorders as present or absent. Traditionally, mental illnesses are considered medically discrete conditions with boundaries between normality and illness (Trull & Durrett, 2005). However, one of the major problems with a categorical approach to personality disorders is the arbitrary and unstable diagnostic boundaries (Widiger, Simonsen, Sirovatka, & Regier, 2006). Consequently, the use of categorical diagnoses can create the impression that there is a qualitative difference, not just a quantitative difference, between the people with a specific PD and those without it (Arntz et al., 2009). Moreover, the arbitrary boundaries can lead to diagnoses of different personality disorders in the same individual. The excessive co-occurrence of diagnoses may indicate that patients have many discrete psychiatric diseases, whereas a dimensional understanding of psychopathology would suggest that patients differ in their profiles (Arntz et al., 2009).

Taxometric studies use empirical data to test whether there is greater evidence for a latent dimensional structure than for a categorical one. Data from recent studies (Arntz et al., 2009) support the conceptualization of personality disorders as extreme positions on an underlying dimensional construct. Taking a dimensional approach, several authors proposed alternatives based on a continuum of personality disorders (Heumann & Morey, 1990; Jackson & Livesley,

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1995; Sprock, 2003; Widiger et al., 2006). Some authors, such as Livesley, proposed both a continuum eliminating boundaries and the use of traits instead of diagnostic criteria to describe personality disorders (Hernandez et al., 2009; Livesley, 2007).

The next edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) will most likely incorporate a dimensional approach to personality disorders. Some authors have proposed a combination of categorical and dimensional models for the DSM-V edition (Krueger, Skodol, Livesley, Shrout, & Huang, 2007). According to this system, a general diagnosis of personality disorder could be moved to Axis I in DSM-V, and Axis II could be revised to register personality traits with a rating scale and prototypes (such as the borderline prototype) (Krueger et al., 2007).

Multivariate Etiological Model of Borderline Personality Disorder

Several etiological models for BPD have been proposed, and the following common features can be identified: (a) most models take a multivariate and interactive perspective; (b) biological and environmental risk factors are represented; (c) emotional dysregulation, impulsivity and cognitive alterations are considered the core features of BPD; and (d) self-regulating behaviors maintain, prolong and reinforce BPD symptoms.

For instance, Lieb, Zanarini, Schmal, Linehan, and Bonus (2004) suggest that genetic factors and adverse childhood experiences might cause emotional dysregulation and impulsivity leading to dysfunctional behaviors and psychosocial conflicts and deficits, which again might reinforce emotional dysregulation and impulsivity. Similarly, the transactional model of BPD by Fruzzetti, Shenk, and Hoffman (2005) proposes a cycle between emotional dysregulation and invalidating responses. In this model, emotional vulnerability heightens emotional arousal, leading to inaccurate expression. In combination with invalidating responses from the environment, inaccurate expression increases emotional vulnerability, and the cycle restarts and worsens.

Linehan's biosocial theory conceptualizes BPD as an emotional dysregulation disorder that is the result of interactions between biological vulnerabilities and an invalidating developmental context. The invalidating environment involves emotional ambivalence and intermittently shows intolerance of emotional expression or reinforces extreme emotional expression. As a result, the child in this environment cannot learn to identify and manage emotions in an adaptive way (Linehan, 1993). A revision of Linehan's biosocial developmental model proposes impulsivity as an additional risk factor for BPD; therefore, poor impulse control would explain the overlap of BPD with other impulse control disorders (Crowell, Beauchaine, & Linehan, 2009). The reformulated biosocial model proposes that early biological vulnerabilities to impulsivity and emotional sensitivity contribute to temperamental precursors in the child. This vulnerability is exacerbated in an invalidating caregiving environment. As a result, emotion dysregulation and lack of behavioral control are made possible. During childhood and youth, traits and behaviors indicative of BPD emerge and may exacerbate the risk of BPD. Finally, maladaptive cognitive, emotional, social, and behavioral outcomes become strategies for regulating or avoiding emotions, reinforcing them and increasing their frequency. The maintenance of these strategies and symptoms is a persistent trait of the borderline personality (Crowell et al., 2009).

The neurodevelopmental model by Putnam and Silk (2005) considers constitutional predispositions to different levels of emotional expressiveness (from severe inhibition to high levels of emotional reactivity and hyperresponsivity) that are likely to have biological correlates (neurotransmitter concentrations, cerebral structures or pathways between structures). The level

of "emotionality" interacts with the caregiver. Children with lower or higher expressiveness will need more attention and flexibility from the caregiver, and the caregiver should help to develop adaptive emotional regulation abilities. If these abilities are not developed, the world and others are cognitively represented as dangerous and rewarding. In combination with an adverse environment and traumatic events (e.g., childhood maltreatment), previous deficits lead to further emotional dysregulation and decrease the ability to regulate emotions. This process becomes a circle with constant interaction between the different factors. Indicators of emotional dysregulation are also BPD symptoms from different domains (behavioral, cognitive, affective, social and interpersonal), and identity disturbance occurs as the result of a chronic state of emotional dysregulation. Putnam and Silk (2005) conclude that our emotions defines ourselves, and if feelings cannot be identified and regulated, we cannot know who we are.

There are some variables common to multivariate etiological models: neurobiological disturbances, adverse childhood experiences, emotional dysregulation, impulsivity, and cognitive alterations. These variables will be briefly explained below.

Neurobiological Impairments on BPD

Structural and functional neuroimaging has revealed dysfunction in the anterior cingulated cortex, the orbitofrontal and dorsolateral prefrontal cortex, the hippocampus, and the amygdala in patients with BPD. Some of the alterations reported in these cerebral areas are altered baseline metabolism, dysfunctional neurotransmission, volume reduction, failure of activation and increased activation (Lieb et al., 2004).

Skodol et al. (2002) reviewed research on neurotransmitter circuits and BPD and reported the following effects: reduced serotonin activity is associated with stimulus seeking, reactivity, and excessive aggression; a combination of increased adrenergic responsiveness and reduced serotonergic activity is associated with heightened irritability and aggressive reactivity; and enhanced dopaminergic activity is associated with psychotic-like symptoms. Crowell et al. (2009) also reviewed the biological correlates of BPD and reported that deficiencies in serotonin, dopamine, monoamine oxidase, and vasopressin were associated with the impulsive, aggressive, and self-injuring features of BPD; emotional liability was associated with deficits in the cholinergic and noradrenergic systems.

Patients with BPD and a history of childhood abuse also showed hyper-responsiveness of the HPA axis, supporting the hypothesis that child maltreatment has pervasive effects on the stress-response circuit (Lieb et al., 2004). After reviewing 18 studies, Zimmerman and Choi-Kain (2009) reported abnormalities in the HPA axis in borderline patients and suggested that the results were influenced by comorbid diagnoses (e.g., PTSD, depression), specific BPD symptoms (e.g., dissociation, self-aggressive behaviors), overall illness severity and trauma history.

Research on the neurobiology of BPD shows evidence of several disturbances. However, a major limitation of these findings is the uncertainty in whether these disturbances are risk factors for BPD or consequences of BPD.

Early Adverse Experiences on BPD

BPD etiological models consider different types of environmental risk factors. Attachment models, for example, focus on failures in caregiving, which encourages the development of either ambivalent or disorganized forms of insecure attachment (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004). Linehan's model includes three types of psychosocial risk: family history of psychopathology, problematic parent-child relationships (emotional invalidation, attachment disturbance, and maltreatment), and sociocultural risk (e.g., income, cultural heritage) (Crowell et al., 2009).

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A common consequence of adverse environmental factors is inadequate learning of adaptive strategies to regulate emotions. For instance, hostile environments, invalidating responses to children's emotional experiences, intermittent reinforcement of intense emotional reactions, and modeling of poor emotion regulation contribute to both emotional instability and poor emotional awareness (Cole, Llera, & Pemberton, 2009). Carlson, Egeland and Sroufe (Carlson, Egeland, & Sroufe, 2009) reviewed the effects of early traumatic experiences and reported a decreased capacity to attend to, recognize and interpret affective states; disturbances in affect regulation, impulse control, and arousal modulation; primitive coping styles and defenses; deficits in the capacity to symbolize affective experiences; a distorted sense of self and negativity bias; and other distortions.

Parenting and childhood trauma have been widely studied in relation to BPD; the consequences of childhood trauma for psychological adjustment have been described above. Research results and the relationships between childhood trauma, parenting and BPD are reported in *Child Maltreatment and Borderline Personality Disorder* section.

Emotional Dysregulation

Emotional dysregulation is considered a core feature of BPD. Emotional dysregulation has been defined as a high emotional sensitivity, inability to regulate intense emotional responses, and slow return to emotional baseline (Linehan, 1993). These clinical features have been supported by self-reported and empirical studies. Individuals with BPD, in contrast to controls, were more emotionally unstable, less emotionally aware, had more intense negative responses, and experienced more negative and prolonged affect (Jacob et al., 2008; Korfine & Hooley, 2000; Levine, Marziali, & Hood, 1997; Putnam & Silk, 2005; Stein, 1996). Emotional task-related functional imaging studies in BPD also showed abnormal function of the amygdala and ventral regions of the prefrontal cortex. Regions associated with emotion regulation also became activated (Donegan et al., 2003; Herpertz et al., 2001; Putnam & Silk, 2005).

In most etiological models, emotional instability, as a temperamental factor, interacts with other vulnerability factors in the initial appearance of BPD symptoms. Etiological models consider emotional dysregulation as a consequence of the interaction between early biological and environmental risk factors.

Impulsivity

Similar to emotional dysregulation, impulsive behaviors can derive from multiple risk factors shaped by gene-environment interactions (Paris, 2005). The pattern of impulsivity characteristic of BPD usually includes repeated suicide attempts, self-mutilation, substance abuse, sexual promiscuity, reckless driving, and eating disorders (Paris, 2005). Some authors suggest that impulsivity is a way to cope with emotional dysregulation; for example, self-cutting can be used to regulate dysphoric states (Linehan, 1993). However, other patients with high emotional dysregulation have low levels of impulsivity. Research studies on impulsivity in BPD showed discrepant results. In general, the association between impulsivity and BPD is higher in self-reported instruments than in behavioral tests (Jacob et al., 2010).

Early impulsivity has been conceptualized as a predisposing factor for both BPD and emotional dysregulation. From this point of view, temperamental disinhibition increases the risk for internalizing and externalizing disorders (Crowell et al., 2009). On the other hand, impulsivity has also been conceptualized as the consequence of emotional dysregulation (Sebastian, Jacob, Lieb, & Tuscher, 2013). Consequently, impulsivity as an emotional self-regulation strategy may be a risk factor for the development and maintenance of BPD.

Cognitive Dysregulation

Dysfunctional cognitive schemas have been described in BPD patients. Beck (1995) defined dichotomous thinking as a characteristic of BPD and identified three disturbed cognitive schemata: (1) the world is dangerous and malevolent; (2) I am powerless and vulnerable; and (3) I am inherently unacceptable. From Schema-Focused Therapy, Arntz and Van Genderen (2009) and Lobbestael, Van Vreeswijk and Arntz (2008) identified schema modes related to BPD. Temperament, parental influence and traumatic experiences interact to form dysfunctional schemas and coping strategies. BPD patients often have different schemas present at the same time, which explains the sudden shifts in feelings, thinking and behavior that characterize these patients. The strongest relationships were found with the following schema modes: the vulnerable child, the angry child, the impulsive child, the undisciplined child, the detached protector and the punitive parent. Dissociative and psychotic-like symptoms represent the extreme cognitive dysregulation of BPD (Zanarini, Gunderson, & Frankenburg, 1990).

The cognitive domain is difficult to separate from other etiological factors. Cognitive dysregulation includes alterations in emotional processing that are linked to emotional dysregulation as the poor emotional awareness. Emotional awareness is the process of providing feedback to oneself about emotions (also called mentalization). Recognizing and understanding internal states facilitates the resolution of situations in socially appropriate ways. Poor emotional awareness involves dissociation, denial, emotional avoidance, and emotional disconnection. These strategies are effective in the short term but counterproductive in the long term, producing higher levels of emotion and more internal distress (Cole et al., 2009).

BPD: A Transactional Model

Although isolated etiological variables have been described in the current section, only the interaction of these variables and the feedback loops are able to reflect the complexity of BPD. The variables in these models are simultaneously causes and consequences, that is, each variable is influencing the others, and there are reciprocal effects. For instance, biological dysfunction can be a causal factor of emotional instability but a consequence of prolonged stress exposure. Emotional instability plus an invalidating environment can lead to poor emotional awareness, which in turn can increase emotional instability. Emotional dysregulation increases self-regulation impulsive behaviors, which increase emotional instability and the avoidance of emotional awareness strategies over the long term. In turn, impulsive temperament is a risk factor and a core symptom of BPD.

In summary, etiological models of BPD are not linear; instead, BPD is characterized by a complex net of feedback loops between biological and environmental vulnerabilities, emotional dysregulation, impulsivity, and cognitive factors.

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Child Maltreatment and Borderline Personality Disorder

Child Maltreatment and Borderline Personality Disorder

The relationship between BPD and adverse childhood experiences has been described in several studies; however, after decades of research, the role of childhood abuse and neglect in the etiology of BPD is still unclear (Ball & Links, 2009).

Initial studies in this area used univariate methods to study the effects of maltreatment on BPD; these studies did not control for the co-occurrence of other types of maltreatment and reported conflicting results. Ogata et al. (1990) found a higher prevalence of child sexual abuse among BPD patients than among depressive disorder patients. Westen, Ludolph, Misle, Ruffins, and Block (1990) reported differences in sexual abuse and physical neglect between BPD and other psychiatric patients. Zanarini, Gunderson, Marino, Scharwtz, and Frankenburg (1989) found a higher prevalence of verbal and sexual abuse among BPD patients compared with other PD patients. Patients with a diagnosis of BPD also reported more physical and sexual abuse than patients with BPD traits (Herman, Perry, & van der Kolk, 1989; Links, Steiner, Offord, & Eppel, 1988).

Univariate studies of sexual abuse and BPD led to multivariate studies that examined the simultaneous association of different types of child maltreatment with different personality disorders (PDs). The results of these studies supported the relationship between sexual abuse and BPD, the importance of other types of abuse in BPD, and the association of child maltreatment with other PDs. For example, Zanarini used logistic regression analyses and controlled for co-occurring adverse childhood experiences in a large sample of PD patients. The experiences that remained as predictors of BPD were sexual abuse by a male non-caretaker, inconsistent treatment by a female caretaker and emotional denial by a male caretaker (Zanarini et al., 1997). Two studies considered the co-occurrence of emotional, sexual and physical abuse, and emotional and physical neglect in a sample of patients with substance abuse and a sample of males with PDs. In both cases, emotional abuse was the only predictor of BPD after taking into account the other types of abuse or neglect (Bierer et al., 2003; Bornovalova, Gratz, Delany-Brumsey, Paulson, & Lejuez, 2006).

Recently, Bernstein et al. (1998) and Lobbestael, Arntz, and Bernstein (2010) used structural equation models to disentangle the effects of different types of maltreatment on PD diagnoses. Bernstein et al. (1998) found that only emotional abuse was a predictor of borderline, histrionic and narcissistic PDs in a sample of substance abusing patients. In a large and heterogeneous sample, Lobbestael et al. (2010) found significant relationships between BPD, sexual abuse, emotional abuse and emotional neglect. Specifically, sexual abuse was associated with paranoid, schizoid, borderline and avoidant PD; physical abuse with antisocial PD; emotional abuse with paranoid, schizotypal, borderline and cluster C PD; and emotional neglect with histrionic and borderline PD.

In a large sample of PDs, Battle et al. (2004) examined adverse childhood experiences while controlling for comorbid PD disorders. Emotional abuse, physical neglect, emotional withdrawal, denial of feelings and failure to protect were specifically related to BPD, whereas

verbal and sexual abuse were predictors of BPD and other PDs. Both longitudinal studies and non-clinical sample studies have found relationships between PDs and emotional abuse and neglect (Gibb, Wheeler, Alloy, & Abramson, 2001; J. G. Johnson, Smailes, Cohen, Brown, & Bernstein, 2000; Tyrka, Wyche, Kelly, Price, & Carpenter, 2009). From another point of view, the additive hypothesis suggests that there is a dose-dependent relationship between the number of types of maltreatment experienced and adult psychological adjustment. For example, BPD patients reported more types of adverse childhood experiences than non-BPD patients (Laporte & Guttman, 2001; Sansone, Songer, & Miller, 2005). In addition, BPD patients who experienced multiple types of maltreatment had higher scores on Axis I symptom scales (Laporte & Guttman, 2001). Similarly, symptoms related to BPD, such as suicide attempts, had a dose-dependent relationship with the number of adverse childhood experiences reported (Dube et al., 2001). Finally, the severity of maltreatment has been associated with the diagnosis of BPD and greater severity of BPD symptoms (Arntz, Dietzel, & Dreessen, 1999; Herman et al., 1989; Zanarini et al., 2002).

Child Maltreatment, Parenting Style, and Borderline Personality Disorder

Relationships between parental rearing style and childhood maltreatment have been reported in adults; maltreatment was negatively correlated with parental care and positively correlated with parental overprotection (Finzi-Dottan & Karu, 2006; Rikhye et al., 2008). Certain parenting behaviors, have been considered risk factors for PD (J. G. Johnson, Cohen, Chen, Kasen, & Brook, 2006), for example, memories of low parental affection, high overprotection and aversive parental behavior were related to BPD in cross-sectional and longitudinal studies (J. G. Johnson et al., 2006; Modestin, Oberson, & Erni, 1998; Nickell, Waudby, & Trull, 2002; Paris, Zweig-Frank, & Guzder, 1994; Zanarini, 2000).

Some studies have simultaneously examined the effects of maltreatment and parenting style on BPD. In a sample of females with PDs, sexual abuse was the only significant predictor of BPD in logistic regression analyses using sexual and physical abuse, separation or loss and parental bonding scales as predictors (Paris et al., 1994). BPD was related to physical abuse, maternal care, and maternal overprotection in a student sample, after taking into account other variables such as sexual abuse and Axis I and II symptoms (Nickell et al., 2002). Russ, Heim, and Westen (2003) performed a regression analysis using sexual and physical abuse and clinician reports of parental bonding as predictors of BPD. Maternal care, sexual abuse and physical abuse remained as significant predictors.

Finally, only Machizawa-Summers (2007) simultaneously examined sexual and physical abuse, emotional abuse, physical and emotional neglect and perceived parental bonding. This study was conducted with a Japanese sample of BPD and non-PD patients. The results from the regression analyses showed that emotional abuse, emotional neglect and paternal overprotection were significant predictors of a BPD diagnosis.

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Chapter 2

Justification

General Justification

BPD is a frequent, pervasive and severe disorder with a long progression that requires a substantial amount of psychological and health care resources. The limitations of categorical approaches and recent evidence support a dimensional structure for personality disorders. Although there is no consensus etiological model of BPD, most models include a combination of genetic and environmental variables as risk factors. Among the environmental factors, we can consider adverse childhood experiences as outstanding variables. Childhood maltreatment has shown a strong association with BPD and a high prevalence among BPD patients.

Childhood maltreatment is also related to biological disturbances, especially those involved in stress responses. As we expected, the biological impairments observed in BPD patients include a disturbed stress response. However, one of the main limitations related to this research topic is the lack of reliable and valid assessment tools for childhood maltreatment. Longitudinal studies are limited by the invisibility of the phenomena and the bias associated with studying detected and treated cases but not prolonged and unreported ones. However, retrospective evaluation is limited by false negative reports (people who experienced childhood maltreatment but do not report it) and, less frequently, false positive reports (people who confabulate, create or exaggerate childhood trauma memories). In light of these limitations, it is necessary to use a non-invasive instrument. In this sense, questionnaires are less invasive than interviews and elicit more sincere answers, especially for false negative cases.

Another important issue to consider for research on adverse childhood experiences is the assessment and control of different types of maltreatment and other adverse childhood experiences. For a long period, the effects of certain types of maltreatment (especially sexual and physical abuse) were examined without considering the co-occurrence of other types of childhood experiences, making it impossible to separate the effects of each one. Later, the focus moved to other experiences, such as neglect or emotional abuse, which were revealed to be as pervasive as sexual abuse.

This work aims to study the reliability and validity of a retrospective assessment instrument of childhood maltreatment and to use the tool to study the effect of each type of maltreatment on BPD, using a dimensional approach and controlling for the co-occurrence of other adverse childhood experiences. The present study intends to contribute data to help clarify the effects of overlapping adverse childhood experiences that are associated with BPD.

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Justification for Study 1

Interest in the study of childhood maltreatment in clinical and non-clinical samples and the relevance of the topic have grown in response to both the high frequency of these experiences and their pervasive effects on psychological adjustment (Briere & Elliott, 2003; Cohen et al., 2001; Widom et al., 2007). Spanish studies estimate that the prevalence of childhood maltreatment in Spain is between 0.44 and 18 per thousand based on the number of cases reported to or detected by the authorities (Centro Reina Sofía, 2005; De Paúl et al., 1995; Inglès et al., 2000; Jiménez et al., 1995; Saldaña et al., 1995; Sanmartín, 2002). However, studies focused on the retrospective assessment of childhood sexual abuse estimate that the prevalence of sexual abuse falls between 12.5% and 19% (Cortes et al., 2011; Lopez, Hernandez, & Carpintero, 1995; Pereda & Forns, 2007). The assessment of adverse childhood experiences has been a major topic of research and remains under discussion. A common strategy in epidemiological and longitudinal studies is to gather data from official records; however, most cases of maltreatment are not reported. A review on child abuse disclosure reported that between 55% and 69% of adults never told anyone about sexual abuse during childhood (London et al., 2008). Retrospective self-assessment instruments for adolescents and adults can overcome the limitation of child nondisclosure; however, this method has limitations, such as recall bias and the inability to demonstrate temporality (Ball & Links, 2009).

Gerdner and Allgulander (2009) state that memories of maltreatment must be assessed with reliable and valid instruments that are easy, ethical and non-intrusive to administer; have conceptual validity; assess relevant types of maltreatment; and are sensitive to maltreatment severity. The Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein & Fink, 1998; Bernstein et al., 2003) is the gold standard instrument for the retrospective self-assessment of childhood maltreatment, and it meets most of these requirements. First, the CTQ-SF assesses five widely accepted types of maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect (Bernstein & Fink, 1998; Sedlak et al., 2010). Second, it is simple to administer, brief and relatively non-invasive, which makes it a good screening instrument for clinical and research purposes. Third, each item is scored using a Likert-type response scale to create dimensional scales and three severity cut-off points for each scale (Bernstein & Fink, 1998). Finally, the CTQ-SF has demonstrated adequate psychometric properties, including a good fit to the five factor structure in clinical and non-referred samples, satisfactory specificity, good sensitivity and good convergent and discriminant validity (Bernstein & Fink, 1998; Bernstein et al., 2003). Moreover, the validity of the CTQ-SF has been supported by independent corroborative data, such as childhood maltreatment interviews, information from referring clinicians and agencies, and the reports of other informants (Bernstein & Fink, 1998; Bernstein et al., 2003; Lobbestael et al., 2009).

Since its initial development (Bernstein et al., 1994), the validity, reliability and stability of the CTQ-SF as an assessment tool for maltreatment memories have been demonstrated repeatedly. The CTQ-SF has also been translated into more than 10 languages and adapted for different countries while retaining good psychometric properties (Fosse & Holen, 2002; Fosse & Holen, 2007; Gerdner & Allgulander, 2009; Grassi-Oliveira, Stein, & Pezzi, 2006; Kim, Park, Yang, & Oh, 2011; Martsolf, 2004; Paquette et al., 2004; Sarchiapone, Carli, Cuomo, & Roy, 2007; Thombs et al., 2009; Wingenfeld et al., 2010; Zhang, Chow, Wang, Dai, & Xiao, 2012).

Because of the strengths of the CTQ-SF and its strong performance in intercultural studies, we consider it necessary to translate, adapt, and provide initial reliability and validity data for the Spanish CTQ-SF.

Justification for Study 2

Research results generally indicate that adverse childhood experiences are a risk factor for BPD, but there is not yet a consensus regarding the types of experiences that play a significant role in the disorder. These results are difficult to integrate because there are differences between the studies in the types of adverse experiences assessed, the instruments used, the samples examined, and the co-occurring variables controlled.

Some studies have simultaneously examined the effects of different types of maltreatment on BPD; however, few of them simultaneously examined the effects of maltreatment and parenting style on BPD. The results of these studies are also diverse, and each study reported different relationships between BPD and types of childhood experiences.

A categorical approach to BPD has been used in most previous studies; however, the existing diagnostic categories for personality disorder (PD) have been described as controversial and problematic. Some of the concerns are the excessive co-occurrence of different diagnoses and the arbitrary and unstable diagnostic boundaries (Widiger et al., 2006). Moreover, taxometric analyses of DSM-IV PDs have indicated greater evidence for a latent dimensional structure than for a categorical one (Arntz et al., 2009). In addition, advances in the study of adverse childhood experiences highlight the importance of taking into account both the severity of maltreatment and the effect of co-occurring adverse experiences (Clemmons et al., 2007; Higgins & McCabe, 2000a; Schilling et al., 2008).

Thus, a study that focuses on the dimensional aspect of BPD and the severity of adverse childhood experiences while controlling for the simultaneous effects of maltreatment and parenting style is needed.

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Chapter 3

Objectives and Hypotheses

Objectives of Study 1

The primary aim of this study is to examine the internal consistency and the factor structure of the Spanish CTQ-SF.

The secondary aim is to provide evidence of discriminant and convergent validity between the CTQ-SF Spanish subscales and memories of parenting style.

A third objective is to examine the associations between the CTQ-SF scales and adjustment outcomes previously found to be related to maltreatment.

Hypotheses of Study 1

- The Spanish CTQ-SF shows adequate internal consistency reliability.
- The factor structure of the Spanish CTQ-SF demonstrates a good fit to the five-factor model of the English version of the CTQ-SF.
- The caring scale is negatively correlated with CTQ-SF scales, especially with emotional neglect.
- The overprotection scale is positively correlated with the CTQ-SF scales, especially with emotional abuse.
- The CTQ-SF scales are associated with the SCL-90-R symptoms scales, SCID-II criteria, and substance use history.

Objectives of Study 2

The first objective of the present study is to examine the association between different types of childhood maltreatment and BPD criteria in a sample of female patients with BPD, patients with other PDs and non-PD patients, controlling for the effect of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria.

The second objective is to examine the relationship between parenting style and BPD criteria in a sample of female patients with BPD, patients with other PDs and non-PD patients, controlling for the effect of childhood maltreatment, Axis I symptoms, and non-BPD PD criteria.

Hypotheses of Study 2

- Childhood sexual abuse, emotional abuse and emotional neglect are associated with a greater number of BPD criteria.
- BPD criteria are negatively correlated with parental care and positively correlated with parental overprotection.

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Chapter 4

Study 1: Initial Validation of the Spanish CTQ-SF

Section protected by copyright. See:

Hernandez, A., Gallardo-Pujol, D., Pereda, N., Arntz, A., Bernstein, D. P., Gaviria, A. M., . . . Gutierrez-Zotes, J. A. (2012). Initial validation of the Spanish Childhood Trauma Questionnaire-Short Form: Factor structure, reliability and association with parenting. *Journal of Interpersonal Violence, 28*(7), 1498-1518. doi: 10.1177/0886260512468240

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Chapter 5

Study 2: Relationships between Childhood Maltreatment, Parenting Style and Borderline Personality Disorder Criteria

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Hernandez, A., Arntz, A., Gaviria, A. M., Labad, A., & Gutierrez-Zotes, J. A. (2012). Relationships between childhood maltreatment, parenting style, and borderline personality disorder criteria. *Journal of Personality Disorders, 26*(5), 727-736. doi: 10.1521/pedi.2012.26.5.727

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Chapter 6

Discussion

Discussion of Study 1

The results of the present study support the reliability and validity of the Spanish CTQ-SF. The primary aim of this study was to examine the internal consistency and the factor structure of the Spanish CTQ-SF. The Spanish adaptation of the CTQ-SF showed adequate psychometric properties and the five-factor structure showed a good fit in a clinical female sample.

The means on the Spanish CTQ-SF scales were similar to those reported for female clinical samples in previous studies (Bernstein & Fink, 1998; Gerdner & Allgulander, 2009). The internal consistency reliability coefficients were good to excellent for four of the five CTQ-SF scales. As in previous studies, the physical neglect scale yielded a Cronbach's alpha coefficient that was lower than .70 (Bernstein & Fink, 1998; Bernstein et al., 2003; Gerdner & Allgulander, 2009; Paquette et al., 2004; Thombs et al., 2009; Wingenfeld et al., 2010).

The CFA results support the five-factor structure proposed by Bernstein et al. (2003). The initial model provided good fit indices without the need for additional new paths or covariance among the errors. As in the CTQ-SF English version, the physical neglect scale showed the lowest factor loadings in the CFA (Bernstein et al., 2003). This result and the low internal consistency of this scale indicate that this factor is the least homogeneous. Gerdner and Allgulander (2009) suggest that the CTQ-SF construct of physical neglect could be composed of two related dimensions: lack of care (items 2 and 26) and lack of supervision (items 1, 4 and 6). This hypothesis may explain the high correlation between emotional and physical neglect because lack of care is similar to emotional neglect. The correlations between the Spanish CTQ-SF latent factors were similar to those calculated for the original version; Bernstein et al. (2003) reported that the highest correlation was observed between emotional and physical neglect. The correlations between the latent factors indicated that when the measurement error was accounted for, the emotional and physical neglect scales are related but do not belong to the same factor.

The secondary aim was to provide evidence of discriminant and convergent validity between the CTQ-SF Spanish subscales and parenting style. We hypothesized that the CTQ-SF would be positively correlated with the PBI overprotection scale and negatively correlated with the PBI care scale. The results of the present study support these hypotheses (Finzi-Dottan & Karu, 2006; McGinn et al., 2005; Rikhye et al., 2008; Seganfredo et al., 2009). The negative pole of the care dimension (parental coldness, rejection, and detachment) was related to all abuse and neglect scales, especially emotional neglect, which is theoretically the most similar construct. The overprotection scale, which assesses psychological control, infringement, and imposition, was related to the emotional abuse scales. Although the labels on the neglect and overprotection scales seem to be contrary poles, a moderate correlation between them is not unexpected. Overprotection reflects psychological control and infringement, whereas emotional and physical neglect reflects a lack of love, care, and supervision. Both experiences often co-occur and are

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not incompatible. The relationship between parental overprotection and sexual abuse was not significant. This result is similar to the results reported in previous studies on samples of patients with panic, anxiety and depression disorders (McGinn et al., 2005; Seganfredo et al., 2009).

The relationships between the SCL-90-R symptoms and the CTQ-SF scales were especially remarkable for the emotional abuse scale. The paranoid ideation scale was related to all the CTQ-SF scales and yielded the highest coefficients. Previous studies also reported relationships between childhood experiences of maltreatment and psychological sequelae (Briere & Elliott, 2003; Edwards et al., 2003; Figueroa, Silk, Huth, & Lohr, 1997). However, we should take into account that most of the SCL-90-R relationships examined in the present study were not significant, including the expected relationship between the CTQ-SF scales and the depression and anxiety scales. Second, the significant correlation coefficients were low to moderate. Finally, the SCL-90-R is used to assess symptoms experienced in recent weeks, not a stable outcome. It is possible to interpret the weakness of the correlations and the lack of expected relationships between the SCL-90-R symptoms and CTQ-SF scales as evidence against the hypothesis that depression and mood state foster the recall of unhappy memories of childhood experiences (Brewin, Andrews, & Gotlib, 1993).

The results from the present study showed the expected relationship between the global score for PD criteria from the SCID-II and the CTQ-SF scales. As we described above, the relationship between personality disorders and maltreatment has been widely studied. Previous studies found associations between childhood maltreatment and personality disorders (Battle et al., 2004; Gibb et al., 2001; Grover et al., 2007; J. G. Johnson et al., 2000; Lobbestael et al., 2010; Tyrka et al., 2009). Although this study's results support the expected relationship between the CTQ-SF scales and poor psychological adjustment, co-occurring maltreatment should be controlled and personality disorders should be analyzed separately to examine and confirm these results.

In the present study, after controlling for the effects of co-occurring maltreatment and BPD criteria, physical abuse and sexual abuse were associated with a greater likelihood of alcohol and cocaine use history. Cannabis use was not related to previous adverse childhood experiences. Previous studies reported associations between physical and sexual abuse and increased risk for abuse disorders (Kendler et al., 2000; Swett, Cohen, Surrey, & Compaine, 1991). Keyes, Hatzenbuehler, and Hasin (2011) also found that childhood maltreatment was a consistent risk factor for the early onset of drinking in adolescence and for adult alcohol use disorders. In contrast, studies with adolescents found a relationship with cannabis abuse. Oshri, Rogosch, Burnette, and Cicchetti (2011) found support for a developmental sequence from early childhood maltreatment to adolescent cannabis abuse and dependence mediated by childhood personality and externalization of problems in preadolescence. Taking the methodological limitations into account, the association between childhood maltreatment and the risk of alcohol and cocaine use supports the expected relationship between the CTQ-SF scales and poor psychological adjustment.

The results of the present study must be interpreted with consideration of the methodological limitations. First, the analyses were performed with an incidental sample of clinical female subjects, and the results cannot be generalized to non-clinical populations or to males. Second, self-reported retrospective data about childhood may be subject to recall bias. Test-retest reliability, stability after therapy, and convergent validity with independent corroborative data have been reported in previous studies, and they support the accuracy of retrospective self-assessment of childhood maltreatment using the CTQ-SF (Bernstein & Fink, 1998; Bernstein et al., 2003; Laporte & Guttman, 2001; Laporte, Paris, Guttman, & Russell, 2011; Paivio, 2001). The PBI scales have shown good test-retest reliability and independence from mood states (Lizardi & Klein, 2005). Future studies should validate the CTQ-SF in male and non-clinical

samples and examine the test-retest reliability and the convergent validity of the Spanish CTQ-SF using corroborative data.

In summary, the Spanish CTQ-SF showed adequate internal consistency. Furthermore, the five-factor structure of the original version was replicated in a clinical female sample. The physical neglect scale was the least homogenous scale. The CTQ-SF scales were associated with parental care and overprotection, except for the sexual abuse scale, which was only related to the care scale. These associations were consistent with the findings of previous research. The results of this study provide initial support for the reliability and validity of the Spanish CTQ-SF.

Discussion of Study 2

The results of the present study support the association between emotional and sexual abuse and BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria. The results of the present study do not indicate a relationship between parenting style and BPD criteria above co-occurring childhood maltreatment or non-BPD PD criteria.

The findings related to sexual and emotional abuse are consistent with previous studies (Arntz et al., 1999; Bernstein et al., 1998; Bierer et al., 2003; Bornovalova et al., 2006; Lobbestael et al., 2010; Machizawa-Summers, 2007; Zanarini et al., 1997). The unexpected relationship between physical neglect and the BPD criteria after controlling for Axis II comorbidities did not remain significant after controlling for co-occurring maltreatment. The low incidence of physical neglect and the simultaneous effect of other types of maltreatment could explain the instability of this result.

However, we did not find the relationships reported in previous studies between the BPD criteria and emotional neglect, parental care, and overprotection. The differences in the controlled variables, the instruments and the samples used could account for these divergent results (Lobbestael et al., 2010; Machizawa-Summers, 2007; Nickell et al., 2002; Russ et al., 2003).

Our results showed a relationship between emotional neglect and the BPD criteria, but this relationship did not remain significant after controlling for other co-occurring types of maltreatment. A possible explanation for the discrepancy in emotional neglect findings could be the different instruments used to assess maltreatment in our study and in the study by Lobbestael et al. (2010); however, previous studies found that the convergent validity between the CTQ emotional neglect scales and the Interview for Traumatic Events in Childhood (ITEC) was quite good (r=.67 p<.001) (Lobbestael et al., 2009). Cultural differences between Spanish and Japanese samples may have also had an effect on Machizawa-Summers' (2007) results. A final alternative explanation is that there were differences in the samples used; the sample in the present study included patients with other PDs but not non-clinical subjects. There may be differences in emotional neglect between BPD patients and those without PDs but not between those with BPD and other PDs. The results of post-hoc analyses in our study support this hypothesis. U-Mann-Whitney tests showed significant differences in emotional neglect between BPD patients and those without PDs (U=299.5, p=.002) but not between BPD patients and patients with other PDs (U=562, p=.176).

The results of the present study do not indicate a relationship between parenting style and BPD criteria that persists after controlling for co-occurring maltreatment or non-BPD PD criteria. This lack of association is consistent with the results of Paris et al. (1994). The findings of these two studies differ from studies that reported that maternal bonding scales act as predictors of

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BPD, as well as sexual and physical abuse (Nickell et al., 2002; Russ et al., 2003). The differences in these results could be explained by the fact that a student sample was used by Nickell et al. (2002), the clinician-report version of the PBI was used in Russ et al. (2003) and relatively few types of maltreatment were controlled in both studies. In contrast, Machizawa-Summers (2007) reported paternal overprotection as a predictor of BPD after controlling for the effects of the five CTQ scales; however, that study lacked a PD control group. As we discussed above, the relationship with paternal overprotection may be not specific to BPD and may also be present in other PDs.

This study has some notable characteristics. First, this study focuses on the dimensional aspect of BPD. Limitations in PD categories have been widely described, and recent research continues to produce evidence for the dimensional structure of PDs (Arntz et al., 2009; Widiger et al., 2006). Second, in this study, types of maltreatment were conceptualized as continuous variables, representing severity. Maltreatment is usually studied as a dichotomous variable (present/absent), but recent findings underscore the importance of considering the severity of childhood maltreatment in research (Clemmons et al., 2007; Higgins & McCabe, 2000a; Schilling et al., 2008). The third major aspect of this study is that it controlled for simultaneous types of childhood maltreatment and parenting style. Family characteristics are related to both childhood maltreatment and long-term adjustment in adulthood, suggesting that the results may be more accurate when they are studied simultaneously (Higgins & McCabe, 2000a). Finally, a notable characteristic of this study is that it controlled for comorbid PD-criteria and included control patients with PDs.

The limitations of the present study make it impossible to determine the direction of the effect between adverse childhood experiences and BPD criteria. The relationships shown in this study cannot be considered causal because maltreatment and perceived parenting style were assessed retrospectively. Self-reported retrospective data about childhood may also be subject to recall bias. The PBI scales have shown good test-retest reliability and independence from mood states (Lizardi & Klein, 2005). Previous studies have assessed the reliability and stability of the CTQ scales before and after therapy, as well as the convergent validity with independent corroborative data, and the results support the accuracy of the retrospective self-assessment of childhood maltreatment (Bernstein & Fink, 1998; Paivio, 2001). Abuse reports by BPD patients have also been corroborated in previous studies using reports by mothers and fathers as well as similar reports of abuse and neglect by their sisters (Bernstein et al., 2003; Laporte & Guttman, 2001; Laporte et al., 2011). The recruitment method is also subject to limitations. Patient participation was voluntary, and each participant's psychiatrist/psychologist provided consent. Because we used convenience non-probability sampling, we cannot generalize these results to other samples. Finally, another limitation is the lack of available information to examine the differences between the patients who agreed to participate and the patients who refused to participate.

The effects of family environment can be difficult to distinguish from the effects of maltreatment because maltreatment usually occurs in the context of dysfunctional families. The findings of the present study help clarify the effects of overlapping environmental factors that are associated with BPD. In summary, BPD criteria were associated with greater emotional and sexual abuse, whereas parenting style did not show a specific association with BPD. These results were still significant after controlling for comorbid Axis I and II symptoms. Future research should replicate these results in male samples and include other adverse childhood experiences related to BPD.

General Discussion

The aim of this work was study the reliability and validity of the Spanish CTQ-SF and to apply it to investigate the effects of each type of maltreatment on BPD, using a dimensional approach and controlling for the co-occurrence of other adverse childhood experiences. The results of these studies support the reliability and validity of the Spanish CTQ-SF and reveal an association between emotional and sexual abuse and BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria.

Reliability and validity of the Spanish CTQ-SF

The Spanish CTQ-SF showed adequate internal consistency reliability, and the factor structure demonstrated a good fit to the five-factor model of the English version of the CTQ-SF. The physical neglect scale showed the lowest reliability coefficients and factor loadings in the CFA. The caring scale from the PBI was negatively correlated with the CTQ-SF scales, especially with emotional neglect. In general, the PBI overprotection scale was positively correlated with both emotional and physical abuse scales and emotional and physical neglect scales.

Spanish CTQ-SF Reliability

The internal consistency reliability coefficients were good for the emotional neglect scale (.83) and excellent for the emotional, physical and sexual abuse scales (.88 to .94). Only the physical neglect scale yielded a Cronbach's alpha coefficient lower than .70 (.66). These results are consistent with previous studies. Bernstein and Fink (1998) examined the Cronbach's alpha coefficients of the English CTQ-SF in seven samples; the coefficients were good to excellent for emotional neglect, emotional abuse, physical abuse and sexual abuse, whereas the reliability coefficients of the physical neglect scale ranged from .60 in a sample of college undergraduates to .83 in a sample of fibromyalgia patients (median = .66). The Swedish, French, Dutch and German versions showed similar patterns of Cronbach's alpha coefficients; the physical neglect scale yielded the lowest internal consistency coefficients (.65, .68, .63, and .62, respectively) (Gerdner & Allgulander, 2009; Paquette et al., 2004; Thombs et al., 2009; Wingenfeld et al., 2010). The Cronbach's alpha coefficients for the physical neglect scale were lower in the non-clinical samples. Higher coefficients were reported for the samples of incest victims (.87), adolescent psychiatric inpatients (.78), and fibromyalgia patients (.83) (Bernstein & Fink, 1998; Gerdner & Allgulander, 2009).

The similarities between the patterns of Cronbach's alpha coefficients in the present study and for the original version of the CTQ-SF and its adaptations in other languages support the adequacy of the internal consistency of the Spanish CTQ-SF. The low internal consistency of the physical neglect scale can be explained by content analyses of the items that compose this scale. As discussed in the *Discussion of Study 1* section, the physical neglect scale seems to be composed of two related dimensions, *lack of care* and *lack of supervision*. *Lack of care* refers to a situation in which there is no one to care for and protect a child and in which no one is aware of the child and available to take him or her to the doctor (items 2 and 26). *Lack of supervision* includes uncovered basic needs, such food and clothing, and parental neglect caused by drug dependence (items 1, 4, and 6). The discussion of the structure of the physical neglect factor is expanded below.

Factor Structure of the Spanish CTQ-SF

Confirmatory factor analysis is generally based on a strong theoretical and/or empirical foundation that allows the researcher to specify an exact factor model in advance. This model usually specifies which variables will load on which factors, as well as which factors are

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correlated. It is more of a theory-testing procedure than exploratory factor analysis (Stevens, 2002).

The fit of the five-factor model proposed by Bernstein and Fink (1998) was good. This model proposes five intercorrelated factors that correspond to the five CTQ-SF scales. All of the fit coefficients and indexes for the model showed good results. It was not necessary to add or remove any paths between factors or residuals to improve the model. The lowest factor loadings were reported for the physical neglect factor (factor loadings for items 1, 4, and 6 were lower than .55; whereas items 2 and 26 obtained factor loadings of .71 and .63, respectively). These differences are related to the dimensions mentioned previously: *lack of care* and *lack of supervision*. These results are similar to the findings of previous studies that have examined the factor structure of the CTQ-SF using exploratory and/or factor analyses. For example, Gerdner and Allgulander (2009) reported loadings of items 2 and 26 only on the emotional neglect factor in the results of exploratory factor analyses. Similarly, Wright et al. (2001) reported the results of confirmatory factor analyses in a sample of university students. Items 2 and 26 were more strongly related to emotional neglect than to physical neglect in the male sample only. The close relationship between the factors of physical and emotional neglect is also reflected in the correlations between both factors (Table 4.3).

Based on previous research, high correlations between the CTQ-SF factors were expected, particularly between emotional and physical neglect. The correlation between emotional neglect and emotional abuse was also high, indicating a strong relationship between these factors. Sexual abuse was more strongly correlated with other types of abuse than with other types of neglect, whereas the physical abuse scale was particularly strongly related to emotional abuse. These correlation patterns were also reported in previous studies (Bernstein & Fink, 1998; Gerdner & Allgulander, 2009; Wingenfeld et al., 2010). The high correlations between types of maltreatment support the existence of multi-type maltreatment (i.e., the experience of simultaneous forms of maltreatment during childhood) (Higgins & McCabe, 2001).

Relationships Between the CTQ-SF and Parenting

Examining the relationships between test scores and related external variables provides evidence of convergent and discriminant validity. For example, the relationships between a test and other instruments designed to measure the same or similar constructs can be examined. One aim of this research was to provide evidence of discriminant and convergent validity between the CTQ-SF Spanish subscales and parenting style.

The correlations between the CTQ-SF and the PBI scales were low to moderate (Field, 2005; Strahan, 1982). Only the correlation coefficients between emotional neglect and maternal and paternal care were higher than or equal to .50. The relationships between emotional neglect and care were predicted to be especially strong. As discussed above (*Discussion of Study 1*), an inverse correlation between the constructs was expected because of their similarity. The emotional neglect scale measures the failure to meet psychological and emotional needs, such as love, encouragement, belonging, and support, whereas the PBI care scale assesses parental warmth, affection, involvement, and empathy. These results provide evidence of the convergent validity between the emotional neglect CTQ-SF scale and the PBI parental care scale.

The relationships between paternal care and emotional abuse and physical neglect were moderate (-.45 and -.44, respectively), but the correlations of maternal care with these CTQ-SF scales were slightly weaker (-.37 and -.39). Some studies reported stronger relationships between maternal care and childhood maltreatment than between paternal care and childhood maltreatment (Finzi-Dottan & Karu, 2006; McGinn et al., 2005; Rikhye et al., 2008). The results of the present study do not indicate that maternal parenting is more relevant than paternal parenting, but additional analyses controlling for co-occurring factors would be necessary to reach a definitive conclusion.

The low correlations (<.30) between the CTQ-SF scales and the PBI scales, especially between sexual abuse and overprotection scales, provide evidence of divergent validity between the instruments.

Childhood maltreatment and BPD

The results of the present study support an association between emotional and sexual abuse and BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria. The results of the present study do not indicate a relationship between parenting style and BPD criteria above and beyond co-occurring childhood maltreatment or non-BPD PD criteria.

Previous studies have related origin family characteristics to childhood maltreatment and long-term adjustment in adulthood. Because of the high intercorrelation between these phenomena, controlling for simultaneous types of childhood maltreatment and parenting style allowed the present study to obtain more accurate results (Higgins & McCabe, 2000a). The high comorbidity of BPD criteria with other psychiatric disorders makes it necessary to control for comorbid PD criteria. Moreover, the inclusion of control patients with PDs and control subjects without PDs in the sample increases the representativeness of a dimensional spectrum of BPD criteria.

A Dimensional Approach to BPD

Recent research suggests that personality disorders are better conceptualized from a dimensional perspective (i.e., they represent extreme positions on an underlying dimensional construct) (Arntz et al., 2009; Widiger et al., 2006). In this study, the BPD criteria were thoroughly assessed, and two highly recognized structured interviews were used to diagnose BPD (First et al., 1997; Zanarini, Gunderson et al., 1989). A specific interview for BPD assessment confirmed the initial diagnosis categories used to describe the sample for initial analyses. A continuous score for each PD was assigned based on the number of PD criteria met. The number of BPD criteria met increased from the subjects without PDs (median 0 criteria) to patients with other PDs (median 2 criteria) to the BPD patients (median 6 criteria). The quantitative difference between the groups and the increasing pattern support the dimensional distribution of BPD in clinical samples.

Child Maltreatment and BPD Criteria

The types of maltreatment were conceptualized in this study as continuous variables representing severity. The score on each CTQ scale reflects a continuum from none/minimal to severe/extreme maltreatment. Previous research noted the importance of considering severity in childhood maltreatment research (Clemmons et al., 2007; Higgins & McCabe, 2000a; Schilling et al., 2008). Child maltreatment is usually described in terms of presence or absence; however, child maltreatment or other adverse childhood experiences cannot be described categorically, and the thresholds used to determine the presence of a type of maltreatment are often arbitrary.

In the present study, the median scores on the CTQ scales showed differences between patients with BPD, patients with other PDs and subjects without PDs. Although most of these differences were not significant after the Bonferroni correction was made, the BPD sample showed an increasing trend to report higher scores on all the CTQ scales in comparison with patients with other PDs and subjects without PDs.

Psychological distress may be a factor that influences the recall of adverse childhood experiences. In contrast, the score on the PSDI was similar between patients with BPD and patients with other PDs, suggesting that maltreatment differences between patients with BPD

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and patients with other PDs are not attributable to high levels of distress in this study. The lower scores on the PSDI in the group of subjects without PDs could be attributable to the higher proportion of outpatients in this sample. Even these results indicate that the PSDI is not related to the BPD sample; the PSDI effect was controlled using Kendall's Tau partial correlation analyses.

The results of Kendall's Tau partial correlation analyses support the important of controlling for the effect of co-occurring childhood maltreatment. The initial analyses that only controlled for the effect of age showed that all the CTQ-SF scales were related to BPD criteria. After controlling for co-occurring maltreatment, only emotional and sexual abuse maintained a relationship with BPD criteria. Even after controlling for the effect of other confounding variables, such as parenting and PSDI, emotional and sexual abuse were significantly correlated with BPD criteria. Similarly, physical abuse and emotional neglect were related to BPD criteria in the first step. However, after controlling for co-occurring PD criteria, only physical neglect, emotional and sexual abuse retained significance. On the one hand, these results support the relationships between the criteria for other PDs and childhood maltreatment. On the other hand, these results support the specific relationships between emotional and sexual abuse and BPD criteria.

Based on previous research, the relationships between emotional and sexual abuse and BPD criteria were expected. The effect size of these correlations must be interpreted after taking certain considerations into account. First, Kendall's Tau correlation coefficient is not numerically similar to the Pearson or Spearman correlation coefficient. Kendall's Tau coefficient is 66-75% smaller than both the Spearman and the Pearson coefficients (Field, 2005; Strahan, 1982). Second, approximately ten variable effects are controlled in each partial correlation calculated, and each controlled variable is strongly related to BPD criteria. Moreover, other PD patients are included in the sample, and PDs are also strongly related to maltreatment. Finally, although the effect size of the correlation between BPD criteria and emotional and sexual abuse could seem low, it must be considered that childhood maltreatment is a probable risk factor in a multivariate etiological model. That is, childhood maltreatment would not be expected to explain all of the variance in BPD when there are many other variables that play a role in the etiological model of BPD (e.g., biological and environmental vulnerability, emotional dysregulation, impulsivity, and cognitive factors).

Parenting and BPD Criteria

The care and overprotection scales from the PBI were used to assess parenting style retrospectively. In general, the maternal care scale showed slightly higher medians than the paternal care scale. The care scale showed a tendency to decrease from the sample without PDs to the patients with other PDs, and the BPD group had the lowest median. Similarly, the maternal overprotection scale showed slightly higher medians than the paternal overprotection scale. The overprotection scale showed tendency to increase from the sample without PDs to the sample of patients with other PDs, and the BPD group had the highest median.

In the first step of calculating Kendall's Tau partial correlations, the associations between the BPD criteria and the maternal and paternal care scales and the maternal overprotection scale were significant. However, after controlling for co-occurring maltreatment, there were no significant relationships between the parenting scales and the BPD criteria. These results show the importance of controlling for co-occurring childhood experiences. In addition, these divergent results indicate that methodological differences can explain inconsistent results between studies.

In contrast to previous studies, the results of the present study do not support the relationship between parenting style and BPD criteria. As explained in the *Discussion of Study 2* section, discrepancies with previous studies can be explained by methodological differences and the

inclusion of patients with other PDs. It is possible to conclude that parenting is not specifically related to BPD and may also be related to other PDs.

Limitations

The accuracy of memories of past events is considered the main limitation of retrospective research on childhood maltreatment. Several factors could account for recall bias: the processing of trauma in psychotherapy; the discussion of trauma with family members and relatives; emotional reactions to socially taboo questions; the participant's mood state at the time of retrospective reporting; self-blame, minimization, denial, and "selective forgetting". All of these factors should be considered, but research on the validity and reliability of retrospective self-reports of early adverse experiences is encouraging. The results of these studies were discussed in the *Methods and Limitations on Retrospective Child Maltreatment Assessment* section.

The test-retest reliability of the CTQ-SF, its stability after therapy, and its convergent validity with independent corroborative data have been reported in previous studies, and they support the accuracy of retrospective self-assessment of childhood maltreatment using the CTQ-SF (Bernstein & Fink, 1998; Bernstein et al., 2003; Laporte & Guttman, 2001; Laporte et al., 2011; Paivio, 2001). The PBI scales have also shown good test-retest reliability and independence from mood states (Lizardi & Klein, 2005). In addition, the present study found a poor relationship between the SCL-90-R scales for the assessment of Axis I symptoms during recent weeks and maltreatment. These results contradict the hypothesis that depression and mood state foster the recall of unhappy memories of childhood experiences (Brewin et al., 1993).

A second limitation of retrospective assessment is that it is incapable of determining the direction of the effect between adverse childhood experiences and BPD criteria. In other words, because temporality criteria are lacking, it is not possible to ensure that maltreatment occurred earlier in time than the outcome. Finally, a relevant limitation of the present study is the use of a non-probability convenience sampling strategy. This study used an incidental sample of clinical female subjects, and the results cannot be generalized to the non-clinical population or to the male population.

Relevance and Applicability

The adaptation of the CTQ-SF for Spanish speakers and the initial evidence of its reliability and validity fill a gap in the retrospective assessment of childhood maltreatment in Spain and permit intercultural studies between different countries. The strengths of the CTQ-SF and its strong performance in intercultural studies make the CTQ-SF a useful and valuable instrument for retrospectively assessing childhood maltreatment. The CTQ-SF assesses five widely accepted types of maltreatment; its administration is simple, brief and non-invasive, making it a good screening instrument for clinical and research purposes; it includes dimensional scales and three severity cut-off points for each scale; and its reliability and validity have been widely supported.

BPD is a frequent, pervasive and severe disorder with a long progression that requires substantial psychological and health care resources. BPD is frequently diagnosed in the Hospital Psiquiàtric Universitari Institut Pere Mata, especially in the inpatient treatment unit. A strength of this study is the use of a dimensional approach to both BPD and childhood maltreatment. Types of maltreatment and BPD are conceptualized in this study as continuous variables, representing severity. Moreover, different types of childhood maltreatment and parenting style were studied simultaneously to obtain more accurate results. The clinical sample in this study includes a variety of disorders, including patients with PDs and without PDs. Clinical samples in the present study reported a high prevalence of childhood maltreatment, which aligns with the

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association between vulnerability to psychological disorders and prolonged exposure to stress (Teicher et al., 2002).

In addition, the findings of the present study help to clarify the effects of overlapping adverse childhood experiences that are associated with BPD. As far as we know, similar studies have not been conducted in Spain.

Suggestions for Further Studies

Future studies should validate the CTQ-SF using male samples and non-clinical samples and examine the test-retest reliability and the convergent validity of the Spanish CTQ-SF using corroborative data. Future research should consider the effects of overlapping childhood maltreatment and parenting in male samples and include other adverse childhood experiences associated with BPD.

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Chapter 7

Conclusions

The results of this study provide initial support for the reliability and validity of the Spanish CTQ-SF.

The Spanish Childhood Trauma Questionnaire-Short Form (CTQ-SF) showed adequate internal consistency reliability.

The factor structure of the Spanish CTQ-SF demonstrated a good fit to the five-factor model of the English version of the CTQ-SF. Physical neglect was the least homogenous scale.

The CTQ-SF scales were negatively associated with parental care, especially with emotional neglect.

The CTQ-SF scales, except for the sexual abuse scale, were positively associated with parental overprotection.

The CTQ-SF scales showed weak associations with the SCL-90-R symptoms scales and the SCID-II traits.

Age, physical abuse and sexual abuse were predictors of alcohol and cocaine use history.

BPD criteria were associated with greater emotional and sexual abuse above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria.

There was no specific association of physical abuse, emotional neglect, physical neglect, and parenting style with BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria.

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Chapter 8

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Chapter 9

Appendixes

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The Borderline Personality Disorder (BPD) is a pervasive and severe disorder with a long progression that requires large amounts of psychological and health resources to treat. Although there is no consensus about the etiological model of BPD, a combination of genetic and environmental variables is thought to increase the risk. Childhood maltreatment has been associated with adult psychological adjustment and psychological disorders and has shown a particularly strong association with BPD and a high prevalence among BPD patients.

The Childhood Trauma Questionnaire-Short Form assesses five widely accepted types of maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. The simple and brief administration and the relative non-invasiveness of the instrument make it a good screening instrument for clinical and research purposes. Moreover, Likert-type responses allow the use of dimensional scales and severity cut-off points.

The first aim of this work is to assess the reliability and validity of the Spanish CTQ-SF, and the second aim is to use the instrument to study the effects of each type of maltreatment on BPD using a dimensional approach and controlling for the co-occurrence of other adverse childhood experiences.

The results of the first study revealed adequate internal consistency reliability of the Spanish CTQ-SF and a good fit of the factor structure to the original version's five-factor model. The results of the second study support an association between emotional and sexual abuse and BPD criteria above and beyond the effects of co-occurring childhood maltreatment, perceived parenting style, Axis I symptoms, and non-BPD PD criteria. The results of the present study do not support a relationship between parenting style and BPD criteria above and beyond co-occurring childhood maltreatment or non-BPD PD criteria.

The results of the first study provide initial support for the reliability and validity of the Spanish CTQ-SF. The findings of the second study are consistent with previous research and help to clarify the effects of overlapping environmental factors that are associated with BPD.

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