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Bullying victimization and Psychosis: the inter-dependence and independence of risk trajectories.

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Abstract

In the last several years a number of studies have noted an association between bullying and psychotic symptoms. Our aim here is to offer an overview on the topic, focusing especially on a developmental perspective. First, we highlight the latest studies to date regarding psychosis across the continuum and its relationship with bullying. In the second section, we summarize the three main explanatory models investigated: developmental, biological and cognitive models. In the discussion section we affirm that the sharing of numerous risk factors put people at risk of both psychosis and of being bullied, and bullying itself may further enhance the development of psychosis. Moreover, bullying is a risk factor for several mental disorders and is non-specific for psychosis, but there is some particularity in the trajectory involved between victimization and the onset of psychosis. In conclusion we recommend that the study of bullying in psychosis requires careful study of the developmental trajectories involved and research should now focus on how personal, social and biological factors interact between them.

1 Introduction

In the last years a research theme in psychosis has been the attention on social and environmental factors. In this context, a number of studies note an association between adversity and psychosis, particularly for stressful events. Varese et al., in a recent meta-analysis, examined the association between childhood trauma (sexual abuse, physical abuse, emotional/psychological abuse, neglect, parental death, and bullying) and psychosis outcome (both as diagnostic and dimensional measures of psychosis), and concluded that there is a significant association with an overall effect of $OR = 2.78$ (95% CI 5 2.34–3.31)(Varese, Smeets et al. 2012).

Bullying is a specific stressful event, typically occurring in childhood and adolescence. It is defined as “intentional aggressive behaviour that is repeated against a victim who cannot readily defend him- or herself” (Olweus 1993).

box 1 around here

The relationship between bullying and psychosis has attracted much attention from researchers in an attempt to further understanding of the mechanisms underlying psychosis. In a recent meta-analysis, Van Dam et al. suggest that bullying increases the risk of psychotic symptoms two-fold, in a dose response fashion; further, bullying is related to more persistent symptoms vs. transient experiences, and the risk is further increased when victims of bullying are also perpetrators (van Dam, van der Ven et al. 2012). Recently Cunningham et al replicated this result in a meta – analysis that included prospective design studies on the relationship between bullying and psychosis (Cunningham, Hoy et al.

2016).

The main aim of this review is to summarize relevant studies on the link between bullying and psychosis as a continuum. Psychosis continuum refers to people with full blown psychosis, subjects at ultra high¹ risk for psychosis, and psychotic symptoms in the general population that do not reach a threshold level capable to determinate a clinical impairment. The second aim is to frame the relationship between bullying and psychosis in a developmental perspective exploring the main theoretical reasons for their connection

2 The relationship between bullying and psychosis continuum

box 2 around here

2.1 Bullying and psychotic illness

Psychotic illness and schizophrenia have long been topics of study by social psychiatry. In recent years, research has once again embraced wider factors in the mechanisms of psychosis in addition to a purely biological explanatory model of schizophrenia and has moved to a bio-psychosocial model that draws additionally on cognitive psychology and social psychiatry (Broome, Woolley et al. 2005). Bebbington et al. studying the Second British Adult Psychiatric Morbidity Survey (APMS), found that people with psychosis showed a prevalence of bullying victimization, four times higher than respondents without psychotic disorder, but this effect disappeared after adjustment for other traumatic life

¹ Ultra High risk subjects are individual in a prodromal phase for schizophrenia. They are recognized from Brief Limited Intermittent Psychotic Symptoms (BLIPS) and Attenuated Psychotic Symptoms (APS). Recent estimates suggest that the risk of transition to psychosis in UHR subjects range from 18% at 6 months to up to 32% by 3 years Fusar-Poli, P., I. Bonoldi, A. R. Yung, S. Borgwardt, M. J. Kempton, L. Valmaggia, F. Barale, E. Caverzasi and P. McGuire (2012). "Predicting psychosis: meta-analysis of transition outcomes in individuals at high clinical risk." *Arch Gen Psychiatry* **69**(3): 220-229..

events. These data have been recently replicated in the second and also the third APMS (Catone G 2015). Another longitudinal study with a baseline for assessing bullying victimization at 8 years and follow up after 10-15 years (18-25 yy) found that 13 patients among 2540 developed a psychotic disorder and 2.9% of these had a status of bullying victim/perpetrator. The effect disappeared when parental education level and general emotional and behavioural symptomatology was controlled for. In the same cohort, the authors showed that bullying predicted psychiatric hospital treatments and use of antipsychotics but when the analysis was controlled for total psychopathology this effect disappeared for males. Some limitations were identified by the authors and include report bias, unspecified times of victimization and a psychiatric diagnosis not determined through a standardized interview (van Dam, van der Ven et al. 2012). A recent article compared the presence of bullying victimization among patients with a first psychotic episode and a control group, showing that patients were approximately twice as likely to report bullying victimization, and the association remained after controlling for confounders, the study also provide interesting data on the strong relationship between conduct problems and diagnosis of schizophrenia spectrum disorders and affective psychosis, and link with cannabis use in a non-stratified analysis (Trotta, Di Forti et al. 2013).

2.2 Bullying and UHR

UHR patients have been indicated as a useful population to study the relationship between trauma and psychosis for two reasons: they allow a follow-up to psychotic disorder, and an intrinsic control group (UHR who do not develop psychosis) at the second time point. UHR

subjects reported more types of trauma than the controls including psychological and physical bullying, which were highly correlated with anxiety, depression, negative sense of self and others and perceived discrimination as well as other types of trauma, and poor social functioning was more expected to be associated to bullying than others trauma (Addington, Stowkowy et al. 2013). Total trauma exposure was positively associated with severity of Attenuated Psychotic Symptoms APS (in particular grandiosity) whereas psychological abuse was linked with suspiciousness, suggesting a link with paranoid beliefs (Thompson, Kelly et al. 2009). In this regard it may be worth focusing in-depth on psychotic symptom content to understand the disorder in relation to prior stressful life experiences. The content of humiliating events such as bullying may be linked to the nature of delusions (Catone, Pisano et al. 2016). Research on the impact of trauma on attenuated psychotic symptoms (APS) showed that in 25 males and 20 females at UHR for psychosis, a prevalence of 82% and 42% for psychological bullying and physical bullying, respectively. Furthermore the study revealed a significant correlation between increased trauma and symptom contents such as grandiose thoughts of status and power, feeling watched or followed, negative thoughts regarding the self and hearing non negative voices (Falukozi and Addington 2012).

Recently, Valmaggia et al. confirmed that bullying is an experience more likely in UHR people with paranoid ideation assessed in a virtual reality paradigm and Stowkowy et al. found that UHR people had more trauma, bullying and perceived discrimination than healthy controls in the North American Prodromal Longitudinal Study 2 – NAPLS 2

(Valmaggia, Day et al. 2015, Stowkowy, Liu et al. 2016). Finally, the recent development of social media and communications technology has generated another form of peer victimization as “cyberbullying” that seems to have the same negative effects on mental health as traditional bullying. Thus the relationship between cyberbullying and UHR has been investigated in a recent paper that reported a rate of 38% of cyberbullying in 50 UHR, with the most frequent types of victimization referred such as bullying via text messages, Facebook and instant messages (chat) (Magaud, Nyman et al. 2013).

2.3 Bullying and psychotic like experiences (PLEs)

Psychotic experiences are also found in the general population as well as in patients with psychotic disorders, and adolescents are a group with higher risk for this condition. An estimated overall median prevalence of psychotic symptom, in the general population was 5.3% (IQR 1.9-14.4) (van Os, Linscott et al. 2009), but in the adolescent population this rate is higher. Psychosocial factors such as childhood trauma and stressful life events can act on Psychotic like Experiences (PLEs) and predict the onset on psychotic symptoms. Bullying was significantly associated with predisposition to PLEs and these phenomena might increase with negative post trauma cognitions and interpersonal context characterized by peer hostility and rejections. A dose response relationship has been demonstrated with PLEs and frequency, severity and stability of bullying, and the timing of the stressful experience early in childhood life (van Dam, van der Ven et al. 2012). Adolescents with PLEs suffer from a high rate of psychopathological problems (included bullying) during crucial developmental periods. Bullying victimization at 8 and 10 yy was a strong predictor of PLEs in a longitudinal study after controlling for prior

psychopathology, familial diversity or child's IQ. Furthermore severity and chronicity of the victimization were the most reliable predictors of transition to psychosis (van Dam, van der Ven et al. 2012).

A recent longitudinal study confirmed these findings showing significant correlations between any role in bullying and psychotic experiences at 18 years, with bully/victims were at greater risk (Wolke, Lereya et al. 2013). The longitudinal association between bullying and PLEs has been confirmed also in the second and third APMS, where bullying was linked with new inception and maintenance of persecutory ideation and to a lesser extent to hallucinations (Catone G 2015). A recent longitudinal study has tried to draw different developmental trajectories of psychotic experiences in order to assess if bullying and cannabis use may act on the beginning of psychotic symptoms or sustain those existing yet. A class model was used that included subgroups of trajectories on the basis of the elevated/persisted or increasing /emerging of psychotic experiences. Bullying by peers significantly predicted change in psychotic experiences in adolescents belonging to increase group characterized by low levels of PLEs but increased over time and emerging of substance use (Mackie, O'Leary-Barrett et al. 2013). Kelleher et al. in a recent paper empirically demonstrated a temporal and bidirectional relationship between the two events with the finding that the cessation of childhood stressful life events predicted reduction of PLEs (Kelleher, Keeley et al. 2013).

3 Theoretical explanations for the association between bullying and psychosis

An analysis of the literature allows us to classify explanatory models into three kinds. These are: developmental models, biological models and cognitive models. These models are not wholly distinct or mutually exclusive.

Box 3 around here

4.1 Developmental models

4.1.1 Personal risk factors shared between the two conditions

There are personal characteristics that increase the likelihood of becoming psychotic that enhance also the possibility of being a victim of bullying. A delay in early development and adjustment difficulties constitutes a pre-morbid aspect of the psychotic disorder. In fact the follow-up studies to date have shown that motor milestones achieved late in the first two years, the presence of poor expressive language ability and social maladjustment at age seven, were a predictor of psychotic onset (Isohanni, Jones et al. 2000). In addition, alterations in cognitive domain such as poor school performances (repeating a grade, low performances), intellectual impairments like lower IQ and neuropsychological deficits have been observed among risk factors for psychosis (Cicchetti and Cohen 1995). Several lines of evidence support a link or a co-presence between autism spectrum disorders (ASD) and psychosis (Rapoport, Chavez et al. 2009). Emotional problems are also involved and cognitive psychology recognizes a central value for internalizing problems such as anxiety, depression, social anxiety and mood instability in the subsequent development of psychotic symptoms. (Freeman and Garety 2003). Bullying victimization seems to share several of these risk factors such as pre-existent adjustment difficulties, ASD diagnosis

(Schroeder, Cappadocia et al. 2014), emotional disturbances, and cognitive and learning impairment. Victims of bullying show poor coordination pre-existent adjustment difficulties, high levels of internalizing problems like depression and anxiety and children who become victims of bullying are described as insecure and sensitive, and showing a lack of confidence in social interactions. Children with disability, low IQ and learning difficulties are more likely to be bullied (Olweus 1993).

4.1.2 Environmental risk factors shared between the two conditions

There are some environmental factors that are shared between psychosis and bullying victimization. A general consensus recognizes ethnicity, social class and living in urban area as risk factors for the development of psychosis (Heinz, Deserno et al. 2013). Victimization by bullying is also more frequent among individuals belonging to disadvantaged social classes and settled in urban areas. A recent study, which set out to find risk factors underlying chronic victimization, emphasized the role of early experience of socio-economic disadvantage. The same study found also that low maternal warmth, low social support and child maltreatment were associated with victimization (Bowes, Maughan et al. 2013). Focusing on parental support, it has been found to highly correlate with bullying, across all forms of victimization. In fact parental characteristics play a central role as they have a dual purpose of ensuring adequate social support and modelling future social behaviour and relationships. (Shields and Cicchetti 2001). Other non-genetic familial factors implicated in psychosis are unwanted pregnancy and maternal stress and depression, paternal psychopathology and disturbances in parents-child relationship.

4.1.3 Attachment, mentalizing, maltreatment and social functioning

The attachment relationship between the child and the caregiver shapes the quality of the later social relationship with others. Troy and Sroufe in a pioneering study found links between attachment status and bullying in children aged 4-5 years, whose attachment status had been assessed at age 18 months, and peer interaction observed during free play (Troy and Sroufe 1987); Walden showed that students with low self-perceived quality of attachment to their primary caregivers reported a high frequency of bullying victimization (Walden and Beran 2010). Furthermore, the quality of attachment is involved in resistance/vulnerability to the traumatic event. Similar factors and processes appear relevant in psychosis inception. The role of attachment has been subject of a recent review, which concluded that substantial evidence existed to support an association between avoidant attachment and psychotic positive and negative symptoms, and modest evidence between attachment anxiety/preoccupation and positive symptoms (Gumley, Taylor et al. 2013).

Research on social cognition established that emotion awareness and regulation and empathy are prerequisites for social skills. Empathy is a broad psychological construct that refers to our ability to understand and feeling or thinking emotion or mental states from others. Therefore, two kinds of empathy, emotional and cognitive have been studied. Terms such as Theory of mind and mentalizing include several aspects of emotional and cognitive empathy (Perry and Shamay-Tsoory 2013). In an elegant study Van Rijn showed that UHR adolescents had problems in identifying and verbalizing their own emotions and appeared socially inadequate (van Rijn, Schothorst et al. 2011), and patients with

psychotic symptoms have mentalizing impairment (Sprong, Schothorst et al. 2007). On the other hand, victims of bullying misunderstand other's intention, having poorer theory of mind (ToM) abilities in their pre-victimization profile and thus having poor ToM in childhood predicts becoming a victim, bully/victim and bully in adolescence (Shakoor, Jaffee et al. 2012).

Studies on maltreated children affirmed that bullied children might expect that aggression characterizes all relationship and this internalization influenced new interactions, resulting in submissive behaviours to protect them from a potential threat. Moreover in middle childhood to early adolescence, the emotion regulation mediated the effect of maltreatment on the subsequent victimization, for example a status of hyper-arousal and anxiety, that may be adaptive in a violent home, was deeply counterproductive in new social settings (Shields and Cicchetti 2001). These findings suggest that temperamental characteristics are involved in determining victimization status and this is likely to be a dynamic process potentially involving victimization modifying temperament and this increasing risk of further bullying.

Children who suffer physical and sexual abuse, are at risk of developing psychosis, in effect the exposure to trauma in childhood may modify the trajectory and outcome of psychosis proneness (Larkin and Morrison 2006).

Victims tended to be more social isolated. This is particularly important in adolescence, a key period for new interactions and social demands and where the tendency to withdrawn may indicate a difficulty in the development process, framed in an organizational perspective.

Functional and social impairment are well known characteristics for individuals who later develop psychosis; impaired social functioning has been shown as a reliable factor in predicting conversion to psychosis in Clinical High Risk CHR subjects, demonstrating stability over time and independency from clinical state (Cornblatt, Carrion et al. 2012); on the other hand, social withdrawal up to a noticeable deterioration in the social, academic or occupational functioning has always been part of the qualitative descriptions of the states of prodromal schizophrenia and current advances in research have confirmed this concept that belonged to the late phenomenological and psychopathological observations (Ruhrmann, Schultze-Lutter et al. 2010).

4.2 Biological models

The most promising explanations emerge from genetic, neuroendocrine and neurotransmitter studies, together with neuroanatomical findings. Peer victimization and psychosis proneness may share underlying genetic components. A candidate seems to be a phenotype characterized by enhanced emotional stress reactivity as argued by a recent study using experience sampling method (ESM) in a cohort of twin that explained how the disposition to psychosis co-segregates with increased reactivity to stress (Lataster, Wichers et al. 2009). In addition, the cumulative effect of repeated victimization has been suggested to developed a sensitized state which was characterized by a change in the individual's response, following exposure to repeated environmental insults.

Genetics also provide explanations on specific genes involved in psychosis onset trauma related, in the context of genetic-environmental (G x E) interaction; a possible candidate seems to be the FKBP5 gene already studied for post-traumatic stress disorder. A single

nucleotide polymorphism (SNPs) in the FK506 binding protein 5 (FKBP5) has been associated with the onset of the stress-related mental disorders. FK506 binding protein 5 is a critical modulator of the feedback loop determining glucocorticoid receptor sensitivity. This gene has been studied in psychotic symptoms. Collip et al. found an interaction between two FK506 binding protein 5 SNPs and childhood trauma and psychotic symptoms supporting the role of the FKBP5 genotype in mediating the effects of childhood trauma on mental disorders. Other potentially important candidate genes mediating gene-environment interactions are neuregulin1, serotonin transport gene (SERT) DNA methylation, SRD5A2 and COMT SNPs (Morgan and Gayer-Anderson 2016).

The behavioural response to stress is related to the functionality of the hypothalamic-pituitary—adrenal (HPA) axis and therefore it has been suggested that bullying could disrupt this system (Vaillancourt, Duku et al. 2008). Several researchers have evaluated the cortisol level in bullied children and adolescents and found a blunted salivary response to stress (Ouellet-Morin, Odgers et al. 2011). Dysregulation of the (HPA) axis is also implicated as a vulnerability to psychosis (Aiello, Horowitz et al. 2012). The role of an increased stress in the onset of psychosis is manifold. For example heightened emotional reactivity could interfere with the ability to cope with everyday situations modulating the release of dopamine. In fact dopamine increases in response to stress and its implication in the causation of psychosis would be of interest to investigate further given the link between increased dopamine release and expression of positive symptom in psychosis. Recently Lodge and Grace reviewed these findings and highlighted the role of the ventral hippocampus (vHipp) as a potential site of convergence by which stress may increase

symptoms associated with neuropsychiatric disease (Lodge and Grace 2011). Indeed the vHipp is associated with both regulation of the HPA axis and the regulation of dopamine neuron activity state (Broome, Woolley et al. 2005).

5.3 Cognitive models

Fowler et al. speculating about the possible pathways between trauma and psychosis indicated four trajectories: one of them was the catastrophic interactions hypothesis that underlines the association between information processing abnormalities and the emotional reactions to stress and in detail they said: “problems in contextual processing associated with vulnerability to psychosis may then have the capacity to distort or exaggerate personally significant threat, related anxiety and a range of emotions”(Larkin and Morrison 2006). This explanation gives rise to two considerations: first, cognitive models looking with interest at a previous vulnerability; second, the impact of the personal appraisal on trauma creates the background in which positive symptoms of psychosis develop and are maintained.

Two examples of complex cognitive models of positive symptoms of psychosis are found in the study of persecutory delusions and hallucinations.

Freeman et al. described a cognitive model for paranoia and persecutory delusions; they explained that persecutory delusions have a common theme of the “anticipation of danger” and have similar maintaining factors as anxiety disorders that are threat beliefs. In the model, anxiety and depression were assumed to be key emotions in the onset and in the content of delusion. For the authors, the delusion experience arises with a precipitator

such as a life event that causes arousal in a background of vulnerability of psychosis that is expressed by long-term emotional disturbances and sleep problems. Then the person feels anomalous experiences that generate an effort of “search of meaning” (Garety and Freeman 2013).

The contribution of cognitive models in the route between trauma and persecutory delusion is clear from the role of the emotions that are triggered by an environmental event such as bullying. The exposure to trauma may contribute to a negative view of the self as exposed to threat and to negative schematic beliefs about the others that impact on the vulnerable individual in the onset of psychosis. Therefore, according to the previous models, persecutory delusions are formed more easily in the subject who has pre-existing belief to be a “soft target” or that the threat was deserved or because other people are seen as hostile due to early experiences. Added to this, there is another explanation that invokes a particular attributional style that has been found to be associated to the emergency of psychotic symptoms. The Locus of Control (LoC) is a cognitive construct that refers to the degree to which individuals have confidence in controlling events that affect them. In a sophisticated analysis it has been shown that bullying had a strong association with psychotic symptoms and the indirect pathways was represented mainly by having an external LoC (Fisher, Schreier et al. 2013).

Several cognitive explanations have been proposed to clarify the mechanisms of hallucinations, but there is an overall consensus that these manifestations are the result of an attribution of an event to external causes instead of internally. This may be explained by the presence of source monitoring deficits. Source monitoring is a group of metacognitive

processes that allow the discrimination of whether events have an internal or external origin. Therefore this vulnerability would be attributed to a difficulty in discriminating the origin of internal or external events, but also to a misattribution of internal cognitive events to an external source. The research on the relationship between trauma and hallucinations has grown in recent years. A direct re-experiencing of intrusive memories, as in PTSD, has been postulated, although in psychosis they are misinterpreted. However, emotional disorders and negative schematic beliefs about the self and others were investigated as mediators between the traumatic experience and the onset of the hallucinations. In a study that tested the association between stressful life events and the onset of hallucinations and stated, the authors stated that “people who have been bullied may subsequently experience anxiety and beliefs about their vulnerability to threat from others. This may trigger voices with threatening harassing contents” (Hardy, Fowler et al. 2005).

6. Discussion

In the last decade there has been a growing body of work on the relationship between bullying victimization and psychosis. The evidence that bullying can interact with the onset of psychotic symptoms is enhanced by the consistency of the studies to date in population-based non-clinical studies. Secondly this finding is reinforced given that the strongest associations are found with greater frequency, severity and persistence of bullying.

Several directions of future research are indicated. With this social and descriptive approach, psychosis research should take into account the specific content of psychotic

symptoms (delusion, hallucination), and if this content is linked with previous experiences. Studies on bullying and UHR patients should take into consideration that being at risk for psychosis might affect the perception of being bullied. For example, having paranoia may make the person more sensitive to misunderstanding the neutral actions of others as bullying. Furthermore, bullying perpetrated in an electronic context (cyber - bullying) should be included as a stressor because it is beginning to demonstrate the potential to elicit psychotic disorders (Krishna, Fischer et al. 2013).

Research on the role of bullying in psychosis cannot be separated from a careful study of the developmental trajectories involved. Bentall argued that a deeper understanding of the origins of psychosis might be obtained integrating theoretical concepts and developmental psychology; in fact the idea that psychosis is the final point of abnormal developmental trajectories cannot be explained solely through understanding neurobiology (Larkin and Morrison 2006).

The complex framework of developmental psychopathology is used to identify the early deviations from normal developmental trajectories that might lead to psychopathology. Hence, the developmental approach focuses on the relationship between normal and atypical processes and how they interact over time, embodies an interest in diverse domains of functioning, and aims to understand the quality of adaptation across the life (Cicchetti and Cohen 1995)

The risk factors shared between the two conditions are numerous. Generally the assessment of the relationship between risk factors and psychopathology offers the possibility of understanding fundamental developmental processes, but the co-presence of

risk-factors makes it difficult to disentangle the links between risk factors, the relative effects of moderators and outcomes (Cicchetti and Cohen 1995). Despite this, it is clear that people at greater risk of developing psychosis also are likely to have an enhanced risk of being victims of bullying in their life. In fact, a profile characterized by poor early adjustment, cognitive and emotional disturbances, co-presence of ASD or difficulties in the social domain and environmental factors such as socio-demographic or even a traumatic or neglectful environment, is shared between the two conditions. The current evidence enables a more complex debate to be raised: is bullying a social trigger to psychosis, able to divert the individual's developmental pathway to the mental disease, or is it a direct manifestation of the inherent vulnerability for psychosis along this pathway? In this regard, Shakoor and colleagues in a large prospective community based twin study have found that bullying and paranoia are almost wholly linked via genetic pattern and then individuals prone to bullying are also phenotypically predisposed to paranoia (Shakoor, McGuire et al. 2014).

Whilst bullying victimization is linked to psychosis, this association is not specific given that stressors such as victimization are linked to a wide range of mental disorders. The developmental perspective offers a theoretical construct that provides support to this statement; it refers to the concepts of "Equifinality", that indicates that different conditions can lead to the same outcome, and "Multifinality", meaning that the same condition can lead to many different outcomes. The study of the risk trajectories involved in the association may explain whether there is any specificity of the pathways involved.

box 4 around here.

Any synthesis of the literature leads to the question of how cognitive and biological models could be integrated. Biological causes offer explanations in terms of psychopathology, how these alterations are transformed into psychic difficulties, and how the environment along with biological alterations can contribute to these. In the biological models section we focused on the role attributed to the limbic structures and that the abnormal input from these results in increased salience and increased emotional reactivity; Salience is the relevance that is attributed to an event, and an increase of salience could lead to psychotic symptoms. Bullying may have the potential to cause subthreshold dysregulation in these systems (Arseneault, Bowes et al. 2010) leading to an excessive appraisal of the victimization, which in turn increases the stress and dysregulation of these systems and this leads to a composition of meaningful connections eloquently psychotic. Alongside this exposure a negative view of self, others and the world develops which may explain the onset of psychotic symptoms.

Several implications arise from this discussion, first of all bullying and other stressful events such as interpersonal trauma and physical and sexual abuse should be included in mental health assessment, especially focusing on childhood and adolescence. Furthermore the association of bullying-psychosis has preventive and therapeutic consequences. Prevention of bullying, perhaps through the implementation of educational and support programs in school, has the potential to reduce the experience of psychotic symptoms. Cognitive behavioural therapy (CBT) might help individuals with psychosis to make sense of their experiences by linking emotions, beliefs and traumatic events with psychotic symptoms. Furthermore CBT can allow individuals to find alternative explanations of

experiences (Larkin and Morrison 2006). In fact psychotherapy may aid individuals to cope with the traumatic consequences of bullying and at a more inner level may have the aim to change negative cognitive schema, and modify the directionality of early psychopathology as well as reducing the potency of bullying to produce psychotic symptoms.

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BOXES

Box 1 “Bullying”

- Bullying can have different forms such as direct (physical, verbal) and indirect (relational and social).
- being a victim of bullying is associated with mental health symptoms. The risk is stronger when the trauma occurs earlier in life (childhood and adolescence) and with increased frequency and severity, and longer duration of being bullied.
- Peer victimization can determine acute distress as well as chronic worrying, nightmares and decreased well-being. The victims are also exposed to long-term consequences on mental health such as depression, anxiety, lower self-esteem and suicide attempts and ideation.

Box 2 “Psychosis continuum”

- research into psychosis has incorporated the concept of the spectrum or continuum. Psychosis covers a range of experience, and this approach suggests that each of these lies along a continuum, that begins with psychotic-like experiences to

the full-blown psychosis and its related syndromes / disorders (schizophrenia, affective psychosis, etc.).

- the concept of the ultra-high risk (UHR) for psychosis, as a segment of the continuum coupled with distress and help-seeking, has been studied over the last decade and holds potential for clinicians due to its high value in terms of providing a window for intervention for the prevention of psychotic disorders and associated morbidity.

Box 3 Mechanisms of association

- Researchers, clinicians and policy makers are interested in how bullying and psychosis may be associated. Distinct trajectories may be involved but, in particular, direct or indirect associations between the two events are both conceivable.
- Psychotic symptoms may develop from a traumatic event as a direct reaction to an adverse event, but bullying could lead to the onset of psychotic symptoms through specific affective or cognitive alterations subsequent to trauma or through a trajectory that recognizes other forms of psychopathology such as anxiety or depressive disorders (emerging from victimization).

Box 4 “proposed developmental model”

- The neurodevelopmental model of schizophrenia suggests that the disease is an end point of several neurodevelopmental abnormalities that started before the onset of the illness, Bullying may interact with this neurodevelopmental process.
- The Traumagenic Neurodevelopmental Model is integration between social, biological and psychological factors that unlike the stress-diathesis model, emphasizes the fact that environment affects the brain. The trauma, if prolonged, generates the vulnerability to psychosis and the oversensitivity to others stress. Bullying victimization may be a condition that has the characteristics of this type of trauma.

- The psychosis-proneness-persistence-impairment model set out that developmental manifestations of the psychosis may subsequently become persistent and determining clinical impairment on the basis of environmental stress to which the person is subject.

LEARNING OBJECTIVES

- Consider a psychotic spectrum rather than a dichotomic concept of the disease (presence/absence)
- Comprehend that by preventing bullying, it may also be possible to prevent the development of psychotic symptoms
- Reflect that Psychotherapy helps integrating previous stressful experiences with current symptoms providing an alternative meaning interpretation

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