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The self and schizophrenia: some open issues

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The construct of schizophrenia, as depicted by the DSM-IV and the proposed DSM-5 diagnostic criteria, lacks a distinctive and typical clinical core. A variety of symptoms and signs are listed, but what links these disparate clinical aspects together remains unclear. We wondered elsewhere (1) whether there is actually a Gestalt in the schizophrenic syndrome, that the operational approach fails to grasp, or whether the Gestalt presupposed by the psychiatric tradition was simply an illusion, that the operational approach unveils.

Josef Parnas' piece appearing in this issue of the journal (2) articulates the view that the psychopathological core of schizophrenia, which confers a Gestalt on this syndrome, is an alteration of the basic, prereflective sense of self. This "basic tone of selfhood", "granted in the brain by a continuous source of internally generated input" (3), normally accounts for the subjective experience of agency, coherence, unity, temporal identity and demarcation (4), and is accompanied by a prereflective sense of immersion in the world (2,5). Its "trait alteration" generates the various clinical manifestations of schizophrenia. The current distinction between positive, negative and disorganization symptoms may appear in this light superficial and misleading: for instance, Schneider's first rank symptoms, usually regarded as "positive" (i.e., involving the presence of experiences which are normally absent), may need to be reconceptualized as reflecting "the absence of something normally present – the sense of ownership or intentional control" (5).

This view, grounded in the phenomenological tradition (6,7), but consistent with classical descriptions (8-10) and several psychoanalytic conceptualizations (e.g., 11,12) of schizophrenia, crops out in the ICD-10 definition of the disorder ("The disturbance involves the most basic functions that give the normal person a feeling of individuality, uniqueness, and self-direction"), as well as in the texts of the DSM-III and DSM-III-R ("The sense of self that gives the normal person a feeling of individuality, uniqueness, and self-direction is frequently disturbed in schizophrenia"), while there is no trace of it in either the DSM-IV or the DSM-5 proposal.

The model, although appealing, raises several conceptual issues that might be the focus of further reflection and research. These issues are primarily related to the multiple notions of self – as many as twenty-one according to Strawson (13) – being used in literature.

First, an antinomy seems to emerge (e.g., 14) between the "trait" self-disorder described by Parnas, developing well before the onset of psychosis (2,4), and the disturbed sense of self portrayed by some psychosocial approaches (e.g., 15,16), which "results from" the illness, with which the person struggles actively, and from which it is possible to recover (17). It seems obvious that the prereflective level of self-experience delineated by Parnas is more basic than the level of "self as a narrative construction" (18) referred to in the above psychosocial literature. However, it is a fact that Parnas' approach mainly focuses on what happens *before* the onset of schizophrenia, while those psychosocial approaches lay an emphasis on what happens *after*. Follow-up studies are needed to explore the course over time of the disorder of self-experience described by Parnas (in particular, to verify its persistence when psychosis remits).

Second, whether the concept of self endorsed by the phenomenological tradition – "autonomous, free and in control" (19) – can be generalized outside Western cultural contexts is questionable. It has been argued that the development of the individual self is unavoidably influenced by cultural meaning systems (the "collective self") and that in other societies the pattern of self-disorder in schizophrenia may be different from that described in Western cultures (19). Cross-cultural studies focusing on this specific issue are currently lacking.

Third, the concept of a stable core self has been questioned by dialogical psychology (e.g., 20), according to which self-experience emerges from the dialogue of several "self-facets", and impairment of that experience in schizophrenia may result from a difficulty to sustain this dialogue in interpersonal situations (e.g., 21). Again, different levels of self-experience are likely to be involved here, with the "dialogical self" being more akin to the "narrative self" mentioned above – an "open-ended construction, which is under constant revision" (18) – than to the basic sense of selfhood described by Parnas. Nevertheless, the interpersonal dynamics postulated by the dialogical approach – with intimate interpersonal contact further destructuring a vulnerable self (e.g., 22) – may be also relevant to the level of self-experience referred to by Parnas (e.g., 23).

In addition to these conceptual issues, Parnas' model raises some practical concerns, which again might be addressed by further research.

First, while proposing and trying to validate a core Gestalt of schizophrenia, we should be aware of the risk to revive an "atmospheric" diagnosis of the disorder, possibly very reliable in the hands of super-experts, but dangerously volatile in ordinary clinical practice. This concern becomes even deeper if the approach is going to be adopted in the very sensitive area of early diagnosis of psychosis. Instruments for a systematic assessment of disorders of self-experience have been developed, which have shown a satisfactory interrater reliability in research settings (e.g., 24,25). However, the feasibility and reliability of these assessments when transferred to ordinary clinical conditions remain to be explored (as well as the way clinicians' psychopathological competence can be upgraded in order to match this challenge).

Second, the diagnostic specificity for schizophrenia of the described self-disorder requires empirical support. Schneider's first rank symptoms, which are typical symptoms evolving from disordered self-experience, have been widely reported to occur also outside the schizophrenic spectrum (e.g., 26). Indeed, one of the proposed changes in the DSM-5 diagnostic criteria for schizophrenia is the reduction of the emphasis on these symptoms, since "no unique diagnostic specificity for these characteristic symptoms in comparison to others has been identified" (www.dsm5.org). Parnas et al (27) were able to document in a research setting that anomalies of self-awareness discriminated significantly between patients with schizophrenia and psychotic bipolar illness, but this finding requires replication, and its generalizability to ordinary clinical contexts needs to be tested.

The third, and most significant, concern is that regarding therapeutic interventions. Is the postulated core self-disorder amenable to any of the currently available treatments? Are basic disturbances of self-experience (as opposed to structured delusions) the real target of antipsychotic treatment, or are we talking about an essentially unmodifiable constitutional deficit (14)? Can cognitive-behavioural techniques be updated in the light of the self-disorder model, or is the level of their action not sufficiently "deep" to impact on the postulated psychopathological core? Should other psychotherapeutic approaches, including psychodynamic ones (e.g., 12,28), be developed or revived? Is the disorder of self-experience related to neurocognitive deficits, and is there any role for cognitive remediation? All this needs to be explored at the research level. Otherwise, there may be the risk to foster a new therapeutic pessimism, just at a time when an orientation toward recovery is being advocated for mental health services.

I believe the impact of Parnas' intriguing approach will crucially depend upon the extent to which the above issues will be convincingly addressed.

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The core Gestalt of schizophrenia

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The recent debate in *World Psychiatry* on prototypes versus operational criteria (1) invites a prototypical reassessment of the clinical-phenomenological presentation of schizophrenia, especially in the light of recent developments in phenomenological psychopathology (2).

Although schizophrenia has been intensively studied for more than a century, with a bewildering accumulation of empirical data, we have still only a very partial understanding of its diagnostic boundaries (3) and pathogenetic mechanisms (4,5). This epistemic resistance motivates a variety of responses: e.g., shortcutting the phenotype-related problems by studying more easily graspable proxy variables; attempts to convert schizophrenia into a dementia-like neurocognitive disease; proposals of further simplification of psychopathological diversity (e.g., the notion of a "unitary psychosis"); or elimination of the notion of schizophrenia altogether.

It seems unlikely, however, that a strategic evasion of a defiant phenotype and silencing the epistemological problems associated with this defiance will somehow lead to an ultimate scientific enlightenment. One additional and timely response is to reexamine the clinical nature of schizophrenia, highlighting its distinctiveness and the theoretical difficulties of its current nosological representations. Perhaps, the epistemic difficulties are related to a disappearance of the phenomenological distinctiveness of schizophrenia in its reifying operational permutations.

EPISTEMIC CONSTRAINS

The epistemological issues at stake are related to the so-called "problem of description" in psychiatry, which is a particular version of the mind-body issue. It is a question of how to address the phenomena of consciousness: e.g., which distinctions are relevant and adequate here, what is the nature of "mental object" (symptom and sign), what is particular to the first-, second-, and third-person perspectives, and what kind of methodology is needed in addressing these phenomenal realms (6).

Since the advent of behaviorism and operationalism, the topic of consciousness vanished from the academic discourse, only to become rediscovered in the last 20 years in the philosophy of mind, cognitive sciences and the neurosciences. Consciousness (subjectivity) is at the forefront of today's scientific debate, constituting perhaps its most important challenge (7). Unfortunately, these developments have largely eluded mainstream psychiatry. Yet, the concepts of mental illness in general, and of schizophrenia in particular, are founded on the abnormalities of experience, belief and expression, i.e. abnormalities of consciousness.

Historically viewed, the notion of schizophrenia crystallized itself as an end-achievement of successive phenomenological descriptions (2). These descriptions may be seen – in retrospect – as a reiterative quest for a characteristic phenotypic pattern, prototype or Gestalt. This search clearly transpires in a famous passage from a Dutch psychiatrist, Rümke, claiming that certain hallucinations and delusions are diagnostic of schizophrenia, but only if they exhibit a certain characteristic schizophrenic taint; a tautological claim, which Rümke himself qualified as "a scientific absurdity", yet absurdity "familiar to every experienced clinician" (8).

The notion of Gestalt refers to a *salient unity* or *intrinsic organization* of diverse phenomenal features, based on reciprocal part-whole interactions. In this framework, psychiatric symptoms and signs cannot be considered as mutually independent, atomic features that become individuated (i.e., identified as *this* or *that* particular symptom) "in themselves", independently of their experiential context. A smile as such cannot be *predefined* as inappropriate or silly. The silliness of a smile only emerges in the *flow* of expressivity and communication. In contrast to somatic medicine, where symptoms and signs possess a clear *referring* function or "extensionality" (e.g., chronic coughing → suspicion of a lung disease), psychiatric phenomena are individuated through their meaning or "intensionality" (e.g., "avoiding others" changes its significance when arising, respectively, due to a paranoid attitude, a melancholic sense of self-reference, or a fear of external access to one's own thinking).

The diagnostic identification of schizophrenia in the pre-operational psychiatry was not based on a cross-sectional, momentary, or, metaphorically speaking, "two-dimensional" summation of mutually independent symptoms and signs ("symptom counting"), but linked to a Gestalt recognition, necessarily imbuing the diagnosis with a dimension of "depth", i.e. contextual interrelations between single features, their *qualities, developmental* and *temporal* aspects.

Two, interdependent, clinical features belong to the notion of schizophrenia: a) a *developmental* aspect, i.e., that schizophrenia typically does not arise abruptly, *ex nihilo*, but is nearly always preceded by a premorbid trajectory, b) schizophrenia belongs to a *spectrum* of conditions, with varying intensity and qualitative profiles, which nonetheless share important trait-phenotypic commonalities. Both aspects are not contingent, *additional* clinical facts but are constitutive of the notion of schizophrenia as involving an essential trait dimension.

“FUNDAMENTAL” SYMPTOMS

The articulation and development of the concept of schizophrenia was founded on the recognition of its phenomenological distinctiveness and typicality, a prototypical “whatness” or phenomenological *core Gestalt*. The core properties are not temporally fluctuating state phenomena (psychotic symptoms), but trait features, reflecting its *phenomenological structure*. To phrase it differently: the validity of the schizophrenia spectrum concept was linked to the clinical manifestations of this core.

There were many attempts to grasp and describe this core Gestalt through a list-wise enumeration of symptoms and signs. Bleuler and others distinguished between *fundamental symptoms*, characteristic of the core and *specifying the spectrum of schizophrenia* (schizoidia, latent schizophrenia, schizotypal disorders) and *accessory* state phenomena, indexing a psychotic episode (hallucinations, delusions, flamboyant catatonic features). The former were typically described on the level of expression and behavior, i.e. mainly as “signs”: withdrawal, inaccessibility, inadequate or strange affectivity, emotional- and affect-expressive changes, formal thought disorder, ambivalence, changes in the structure of the person, disorders of volition, acting and behavior (2).

Many of these features overlap on a closer inspection. More importantly, their predominantly expressive (“objective”) sign character is usually associated with anomalies of experience (symptoms). Thus, rather than functioning as self-subsistent, mutually independent signs, the single “fundamental features” are *aspects* of larger wholes, jointly constituted by anomalies of experience *and* expression, and with a diagnostic significance that manifests itself contextually and most pregnantly in the interpersonal and communicative-symbolic space. We witness here a part-whole reciprocity of a Gestalt: the single features infuse the Gestalt with its concrete clinical rootedness, whereas the wholeness of the Gestalt confers on its single features their diagnostic significance.

GENERATIVE DISORDER: ALTERED STRUCTURE OF SUBJECTIVITY

There were many, often metaphoric, designations for the underlying structure or Gestalt, e.g., “disunity of consciousness”, “discordance”, “intra-psychic ataxia”, “autism”, “loss of vital contact with reality”, “global crisis of common sense”, “cognitive dysmetria”, etc. A common referent of these designations is not a modular psychological dysfunction or a delimited, fleeting, pathological mental content, but rather *a trait alteration of the very structure of consciousness* (subjectivity, mentality). It was phrased in the ICD-8 as “the fundamental disturbance of personality [i.e., self], [which] involves its most basic functions, those that give the normal person his *feeling of individuality, uniqueness, and self-direction*” (my additions in square brackets).

The phenomenological, experiential, notion of the self signifies that we live our (conscious) life in the first person perspective, as a self-present, single, temporally persistent, embodied, and bounded entity, who is the subject of his experiences. A stable sense of this basic selfhood and identity always goes together with an automatic, un-reflected immersion in the shared (social) world. The world is pre-given, i.e. always tacitly grasped as a real, taken-for-granted, self-evident background of all experiencing and all meaning (9).

Recent empirical studies confirm more classic observations that this basic and foundational self-world structure of subjectivity is unstable or failing in schizophrenia, constituting its core vulnerability (2,10). This often results in alarming and alienating experiences, typically already occurring in childhood or early adolescence. This structural alteration marks the nosological extension of the schizophrenia spectrum disorders: it occurs in schizophrenia, schizotypy (11-15) and in pre-onset vulnerability (16,17).

The patients feel ephemeral, lacking a core identity, profoundly (often ineffably) different from others and alienated from the social world. There is a diminished sense of existing as an embodied subject, self-present and present to the world, distortions of first person perspective with anonymization or deficient sense of “mineness” of the field of awareness (“my thoughts are strange and have no respect for me”), spatialization of experiential contents (e.g., thoughts being experienced as spatially located extended objects) and failing sense of privacy of the inner world. There is a significant lack of attunement and immersion in the world and pervasive perplexity, i.e. inadequate pre-reflective grasp of self-evident meaning (“why is the grass green?”) and hyper-reflectivity (“I only live in my head”, “I always observe myself”). Social isolation and loneliness are more solipsistic, arising “from within”, rather than functioning solely as a psychological defense or a simple deprivative consequence of the illness. The basic disorder often translates into altered and strange existential patterns, e.g. solipsistic grandiosity, bizarre attitudes and actions, “double book-keeping”, mannerist behaviors, or searching for new existential or metaphysical meaning (e.g., adherence to sectarian political or religious groups).

What is diagnostically significant at the level of the core Gestalt is the sense of confronting a condition marked by a *fundamentally changed subjectivity* that may manifest itself across all mental domains: affect, expression, motivation, mood, cognition, willing and action. The core Gestalt transpires through the illness’ polymorphic picture in *how* the patients experience themselves, others, and the world, and not merely in *what* they experience. The core Gestalt possesses a generative status, making the clinical picture less enigmatic, because endowed with certain static (synchronic) and developmental coherence of its symptomatic elements. The delusions, passivity phenomena and hallucinations of the psychotic phases often appear as thematic elaborations of the more primary features of the altered structure of self-world experience (18).

CONCLUSIONS

An unintended consequence of the operational remake of the diagnostic systems was a decline of psychopathological competence and scholarship (19), coupled with reification of diagnostic categories and the associated explosion of the phenomenon of comorbidity. Schizophrenia became largely reshaped into a psychosis with chronic delusions and hallucinations, depleted of affective features. The diagnoses of schizotypal disorder and disorganized schizophrenia (more broadly, non-paranoid schizophrenia) have become a clinical rarity, yielding space for a variety of other, alternative (typically, checklist-derived) diagnoses, e.g., borderline personality disorder, social phobia, obsessive-compulsive disorder, attention-deficit/hyperactivity disorder, etc. (20).

There is no other way forward than reviving and prioritizing teaching of psychopathology, including peer-shared assessments of psychopathology, accompanied by theoretical and interdisciplinary studies and discussions. A reinvigorated investigation of trait features of schizophrenia is today urgently needed to achieve a significant progress in pathogenetic and therapeutic research and for improvements in clinical practice, which includes early diagnosis and intervention. A sophistication of psychopathology is a necessary condition for a fruitful match with the scientific and technological possibilities offered by the rapidly advancing basic neuroscience.

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PERSPECTIVE

The placebo response: science versus ethics and the vulnerability of the patient

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In the past few years there has been a terrific increase in our knowledge of the mechanisms of the placebo response. Through both a neuropharmacological and a neuroimaging approach, researchers have investigated the very nature of the placebo phenomenon across a variety of medical conditions, ranging from pain to motor disorders and from immune system diseases to anxiety and depression (1-3).

The placebo response is an intriguing topic, for it has to do with complex mental events such as expectations, beliefs, trust and hope. The very mental act of trusting a doctor and believing in a therapy may trigger an intricate cascade of biochemical events that, in turn, may change the perception of a symptom or even the course of a disease. It goes without saying that one of the most important factors that triggers expectations and beliefs is represented by verbal suggestions, so that the neurobiology of the placebo response can be somehow rephrased as the neurobiology of suggestion as well as the neurobiology of expectation (1).

What we have learned over the past years is that verbally induced expectations may activate different neurotransmitters (4-7). For example, in pain, opioids, cannabinoids, dopamine and cholecystokinin are involved in different circumstances, and they can modulate pain perception in different directions. Positive verbal suggestions lead to positive expectations that, in turn, activate either opioid or cannabinoid systems (analgesic placebo response). Conversely, negative verbal suggestions lead to negative expectations which activate cholecystokinin and deactivate dopamine (hyperalgesic nocebo response). These biochemical events are likely to take place, at least in part, in a pain modulating network that involves both cortical and subcortical regions, e.g. the dorsolateral prefrontal cortex, the anterior cingulate cortex and the periaqueductal grey, as well as in the reward circuit, particularly the nucleus accumbens (8).

On the basis of these recent insights, it is clear that the placebo response represents an excellent model to understand mind-body interactions, whereby a complex mental activity can change body physiology. Psychiatry and psychology, as disciplines investigating mental events, are at the very heart of the problem, for they use words and verbal suggestions to influence the course of a disease. Psychiatry, for example, has in its hands at least two therapeutic tools: words and drugs. Interestingly, what has emerged from recent placebo research is that words and drugs may use the very same mechanisms and the very same biochemical pathways (9). Morphine binds to mu opioid receptors, but verbal suggestions of pain reduction may activate the same receptors. Likewise, cannabis binds to cannabinoid receptors, but suggestions of pain decrease may act on the same receptors. And also, anti-Parkinson agents bind to dopamine receptors, but verbal suggestions of motor improvement activate the same dopamine receptors in the very same brain areas. Therefore, the crucial concept is that, when a drug is administered, the same receptorial pathway can be activated in two different ways: by the drug itself and by the expectation of the drug.

Verbal suggestions are not the only means to induce expectations. The whole therapeutic setting (health professionals, medical instruments, hospital environment) represents what can be called the ritual of the therapeutic act. Indeed, drugs are less effective without therapeutic rituals. The hidden administration of drugs, whereby a pharmacological agent is administered unbeknownst to the patient, is less effective compared to an open administration in full view of the patient (10-12). In the hidden condition, the patient has no expectations of improvement, so that the global drug effect is reduced. In other words, the patient's expectations and beliefs add to the pharmacodynamic effect of drugs.

This new scientific knowledge leads us to better understand how our brain works and what kind of strategies it uses during social interactions. In fact, this special social encounter with the doctor (the healer) may trigger a number of mechanisms in the patient's brain which *per se* can be therapeutic. Therapeutic rituals are crucial in this sense. The mere act of performing a therapy may have biological and therapeutic effects, a kind of evolutionary mechanism that is likely to have evolved from social grooming in apes and altruistic behavior in early hominids (13). An individual who trusts a member of his own social group, whether a shaman or a modern doctor, has surely an advantage over those who lack this mental disposition. This pure social interaction can, in some circumstances, be as powerful as the action of a pharmacological agent.

The very existence of these trust- and belief-related features of mankind raise a number of problems and ethical concerns for the medical profession and, more in general, for our society. Although ethical issues related to the placebo response have long been known and debated (14,15), the most recent insights into the neurobiology of the placebo response have boosted some ethical concerns further. In fact, what is emerging today from a strict scientific standpoint is that the very ritual of the therapeutic act can change the patient's brain, thus anybody who performs a therapeutic ritual can influence the physiology of the patient's brain and obtain positive effects. If a syringe filled with distilled water and handled by a doctor may induce expectations of benefit, then the same expectations can be induced by talismans, mascots and bizarre rituals carried out by quacks and shamans.

The tight relationship between the growing eccentric healing practices and the recent biological advances in placebo research is shown by the growing tendency to refer to the effects of placebos as real biological phenomena that need to be triggered and enhanced by a variety of odd, weird, and bizarre procedures. Particularly in very recent times, right after the experimental demonstration that endogenous opioids and cannabinoids can be activated by placebos (1,5), I personally was deluged with requests and proposals of new bizarre procedures, concoctions, talismans and mascots that could possibly enhance expectations, beliefs, trust and hope.

By surfing on the web, it is possible to realize that many websites have taken the biological effects of placebos as a sort of justification for bizarre therapeutic rituals. Many healers claim that after all there is no difference between a sugar pill and a talisman if one wants to deceive a patient and see if he/she will have a positive response. Deception is at the very heart of a placebo procedure, and indeed it makes no difference if this deception comes from a doctor or a quack or a shaman. From this perspective, many argue, any procedure that increases expectations and beliefs would be justified, no matter where it comes from. According to this worrisome view, any healer should strive to explain and clarify the purpose of his/her ritual, namely, the stimulation of chemicals in the patient's brain which are beneficial in a variety of conditions. This conception is supported by the recent rigorous science of placebo, which itself gives credibility to the enhancement of expectations with biological effects.

To prevent this disconcerting and upsetting perspective, there are three possible solutions. First, we could stop placebo research because of its potential consequences. When the neuroscientist studies the neurobiology of the placebo response, he wants to unravel the brain mechanisms of a human foible and a vulnerable trait that represent per se the very heart of human social interactions (13). In this sense, science risks to be exploited in the wrong way and, paradoxically, the neurobiological advances can turn into a regression of medicine to past times, when the eccentricity and oddity of the therapies were the rule. Second, we can accept that expectations can be enhanced with any means available and by anybody through bizarre and odd practices, a perspective that would surely be very dangerous. Third, if we do not want to adopt these extreme positions, we must develop new ways to communicate the results of placebo research. This is not an easy task, for scientific advances will inevitably go against ethical concerns as we will learn more and more about the biology of a vulnerable aspect of mankind.

I think psychiatry and psychology are disciplines that are more involved in these ethical issues than others, because mental disorders such as depression, anxiety and somatoform pain are those conditions for which people more often refer to bizarre practices and to unscrupulous healers. Therefore, the new neurobiology of suggestion and placebo faces the ethical dilemma of what to do. The study of the biology of foibles and vulnerable aspects of mankind, and particularly of patients, may unravel new mechanisms of how our brain works, but it may have a profound negative impact on our society as well, and requires good communication between science, ethics and media.

I believe some of the most important questions we will need to answer are: What is the ethical limit to increase expectations? Can we accept every means available, whether a sugar pill or a talisman? What about a patient who trusts talismans but not pills and injections? Is it acceptable to use a talisman to activate his brain chemicals? These questions presage a worrisome future for medicine.

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Predicting the severity of everyday functional disability in people with schizophrenia: cognitive deficits, functional capacity, symptoms, and health status

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Disability is pervasive in schizophrenia and is refractory to current medication treatments. Inability to function in everyday settings is responsible for the huge indirect costs of schizophrenia, which may be as much as three times larger than direct treatment costs for psychotic symptoms. Treatments for disability are therefore urgently needed. In order to effectively treat disability, its causes must be isolated and targeted; it seems likely that there are multiple causes with modest overlap. In this paper, we review the evidence regarding the prediction of everyday disability in schizophrenia. We suggest that cognition, deficits in functional capacity, certain clinical symptoms, and various environmental and societal factors are implicated. Further, we suggest that health status variables, recently recognized as pervasive in severe mental illness, may also contribute to disability in a manner independent from these other better-studied causes. We suggest that health status be considered in the overall prediction of real-world functioning and that interventions aimed at disability reduction targeting health status may be needed, in addition to cognitive enhancement, skills training, and public advocacy for better services.

Key words: Schizophrenia, disability, cognition, functional capacity, intrinsic motivation, environmental factors, health status

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Schizophrenia is one of the world's most disabling illnesses (1), with patients experiencing deficits in a variety of everyday functional domains (2). Most of these impairments are homogeneous across different countries and cultures, with functional abilities appearing to be equivalently impaired in patients who are demographically similar across Western and developing countries (3,4).

There are several aspects of the ability to perform cognitive and functional skills that are impaired in people with schizophrenia, including cognitive functioning indexed by performance on neuropsychological tests (5) and performance on targeted assessments of functional skills (6). There are also a variety of environmental and cultural influences that impact on everyday functioning, in both positive and adverse directions. These include disability compensation, opportunities, residential support, and various elements of attitudes and stigma (7,8).

Illness symptoms, including depression, negative symptoms, psychosis, and awareness of illness, also impact on functioning (9). Interestingly, these influences do not appear to impact on functioning through some type of influences on ability variables, but rather seem to have a direct impact on functioning that does not reduce the abilities that underlie function.

Finally, there are a large array of factors that impact everyday functioning in people without serious mental illness that have received little research attention despite the fact that they are quite prevalent in people with severe mental illness. These factors include metabolic disorders, heart disease, pulmonary conditions, and their everyday functional sequelae. While the presence of these conditions in schizophrenia is well documented (10), there have been few attempts to determine the extent to which these factors impact on everyday functioning and where their influence would occur.

In this paper, we review the evidence that allows for the quantification of the influences of various factors on real-world functioning in people with schizophrenia. We base our review on published literature that examines the correlations between various potential predictive factors and everyday outcomes. Furthermore, we propose several additional areas of investigation that might add to the understanding of the previously unaccounted for variance in disability in everyday functioning. We also examine whether it is possible that the above factors, if suitably addressed, could reduce the occurrence of everyday disability in schizophrenia.

FACTORS AFFECTING EVERYDAY FUNCTIONING IN SCHIZOPHRENIA

Despite the striking nature of psychotic symptoms in schizophrenia and other severe mental illnesses, the most costly problem in these conditions is impairments in everyday functioning. These impairments lead to a total cost that is substantially greater than that associated with the treatment of psychosis by both medications and psychiatric admissions. Impaired everyday functioning in people with schizophrenia spans the major functional domains of independence in residence, productive activities, and social functioning (11). Achievement of typical milestones is less common than in the healthy population, and many functional skills (i.e., social, vocational, and independent living) themselves are performed at lower levels.

Impaired everyday functioning is a complex phenomenon, because there are many factors that contribute to adequate outcomes. They include the ability to perform functional skills, the motivation to perform the skills, recognition of the situations where skilled performance is likely to be successful, as well as factors that interfere with ability, motivation, and the situation recognition required to optimize skills performance. These interfering factors include symptoms, health status, and medication side effects. Further, there are environmental factors that directly and indirectly influence functioning in the real-world. Direct influences include lack of opportunities to achieve functional goals (e.g., living in a neighborhood where no one speaks your language; high unemployment rates) or legal restrictions (e.g., immigration status). Indirect environmental influences include disincentives, such as contingent relationships between disability compensation and health insurance, which then force people to decide between attempting to work and receiving treatment for their illness.

Figure 1 shows our model of the cascade to impairments in everyday functioning. The direct influences include functional capacity, social cognition, symptoms, environmental factors, and health status. Some of these variables have been investigated in much detail than others and many have never been examined in a systematic multivariate study that included all or even any other of the different potential predictors. Further, the influences of some factors on functional outcome, such as performance on neurocognitive tests, are found to be much stronger when other potentially mediating factors, such as functional capacity, are not considered. Similarly, many features of schizophrenia impact on everyday outcomes without influencing their performance-based precursors: cognition, functional capacity, and social cognition. Thus, our model is not the result of a meta-analysis, but rather a theoretical summary of the multiple potential influences on everyday functional disability identified across multiple research studies in people with schizophrenia.

Cognitive functioning

In the past 20 years, there has been a burst of interest in the influence of cognitive deficits on everyday functioning. There have been many detailed reviews of this literature, so we will summarize the results of these reviews rather than cover old ground. Several of these findings are most important. These include the size of the correlation between cognitive deficits and everyday functional deficits, the specificity of this relationship across different cognitive ability domains, and which aspects of everyday functioning are more vs. less associated with cognitive impairments.

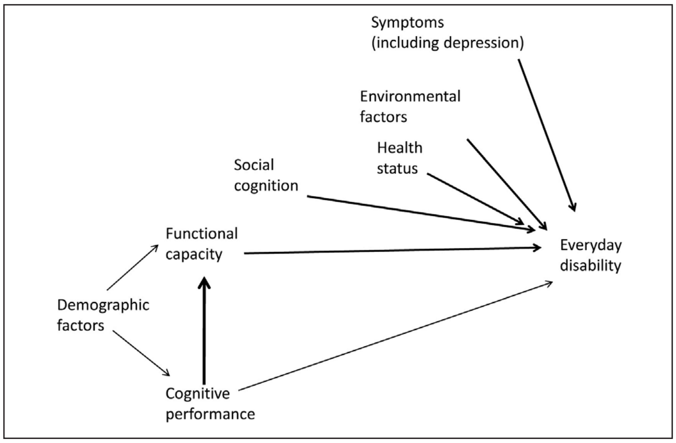

Figure 1 Predictors of everyday disability in people with schizophrenia

The findings across studies are generally consistent. Individual cognitive ability domains (e.g., learning, attention, executive functioning) have small to moderate correlations with global indices of everyday functioning (12). Further, composite scores manifest a generally moderate to large correlation with everyday functioning (5,12). When everyday functioning is rated by a clinician observer, the correlations with cognition are higher than when patients self-report their functioning (13). There is little evidence that there are specific cognitive deficits that predict specific functional deficits, possibly because "specific" cognitive deficits measured with neuropsychological tests are themselves quite multifactorial. More consistent evidence suggests that there are certain functional domains, social outcomes in particular, that are more strongly predicted by impairments other than cognition, including social cognition deficits (14) and negative symptoms (15).

Achieving independence in residential functioning seems most strongly correlated with cognitive intactness (11). Many people with schizophrenia are not seeking work, so the correlation between cognitive abilities and being employed can be reduced as a result. However, when patients are in structured programs and seeking employment, higher baseline levels of cognitive functioning and experiencing a cognitive benefit from remediation interventions both predict vocational success (16,17). Thus, the predictive nature of cognitive impairment in employment settings requires a desire on the part of patients to seek and sustain work.

Functional capacity

This is a rapidly developing concept and refers to the skills that underlie functional success. These skills include the ability to perform in the areas of residential functioning, work, and social skills (18). These abilities can be measured with tests that are administered in a manner similar to neuropsychological batteries, in a structured, quantified, and performance-based assessment that does not rely on self-report or the environmental opportunity or personal motivation to achieve functional milestones. Thus, it is possible to validly measure whether an individual could perform the skills necessary to work or live independently, even if the unemployment rate was high and the individual did not have the financial resources to afford a residence.

Several studies have found that indices of functional capacity are at least as strongly correlated with real-world functional outcomes as cognitive performance (9). Further, the correlation between performance-based neuropsychological assessments and the results of functional capacity assessments are quite high, averaging about r=.6 or more (and are found to be remarkably consistent across studies) (13). It has been hypothesized that cognitive impairments may exert their influence on everyday functioning through their relationship with functional capacity (19). Thus, cognitive deficits may reduce the ability to perform critical everyday functional acts, which in turn reduces the chances of successful everyday functioning.

In some studies, cognitive performance has been found to exert a minimal influence on real-world functioning when the influence of functional capacity was considered (9,19). However, given the high correlations between neuropsychological performance and functional capacity measures, some studies have found the opposite result: that neuropsychological performance accounts for all of the variance in everyday outcomes and functional capacity does not contribute (20). This is likely a function of statistical artifacts and more studies have found functional capacity to be most proximal to everyday functioning than the reverse.

Recently, a systematic large-scale study (6) was undertaken which aimed to determine which functional capacity measures were simultaneously most strongly related to both cognitive performance and everyday functioning. The results of this study suggested that several different functional capacity measures were strongly correlated with neuropsychological performance and related to everyday functioning and that both long and shorter forms had suitable psychometric properties as indexed through correlations with neuropsychological performance. Other studies have suggested that functional capacity measures have psychometric properties (test-retest reliability, variance, and practice effects) that are very similar to those seen for neuropsychological tests (21).

A critical set of validity data for functional capacity measures (and especially relevant to a world-wide audience) has been the findings that functional capacity measures show considerable similarity across studies performed in different countries. One of the arguments previously raised in support of neuropsychological functioning as a core feature of schizophrenia was the similarity in performance across the course of the illness and in different countries and cultures. Similar data have been produced for assessments of functional capacity. For example, patients in Sweden and New York City were found to be remarkably similar in their performance in functional capacity assessments, more similar than their performance on neuropsychological assessments (3). This similarity was found despite marked cultural differences in social support for people with schizophrenia, where it was close to three times more likely that a person with schizophrenia would be living independently in Sweden than in New York because of local social support factors.

In a study completed in China (4), it was found that functional capacity measures were quite sensitive to schizophrenia compared to healthy people, across a wide educational range spanning from 1 to 20 years. There was a substantial education effect that did not interact with illness, suggesting that the lives of more educated people are more complex and require more functional skills. That said, college educated people with a diagnosis of schizophrenia were found to be performing similarly to healthy people who completed only middle school, suggesting considerable compromise associated with severe mental illness compared to healthy people. The effect sizes of this difference were similar to previous studies completed in the US.

Social cognition

As noted above, social cognition may be more strongly related to real-world social outcomes than neuropsychological performance (22). Social cognition refers, in general, to domains of ability that are cognitive, but directly linked to the skills required for social functioning, such as interpersonal perception and interactions. Domains of social cognition include emotion recognition, in both visual and auditory modalities, inference of other's impressions of one's self, judgment of intentions, and other related domains (23). Several reviews (24,25) and a recent meta-analysis (14) suggested that social cognition has consistent correlations with social functioning, including social milestones such as marriage or equivalent stable relationships and other social functions such as developing and maintaining friendly relationships.

One of the issues associated with social cognition, however, is that its definition and measurement is not as advanced as neuropsychological performance or even functional capacity. There is very little known about the psychometric properties of these measures, and many of them have been modified by individual research groups, leading to reduced comparability across studies related to more standardized neuropsychological assessment methods. Further, there has been very little research examining the contribution of social cognition to other functional domains such as employment, where social abilities are required to acquire and maintain many different jobs.

Symptoms, including depression

Psychotic symptoms in schizophrenia have been found to have remarkably little association with everyday functioning on a cross-sectional basis (5). While this seems counter-intuitive, patients can achieve sustained remission of their psychotic symptoms and still manifest considerable disability in multiple functional domains. Further, patients with persistent psychosis may be able to sustain independence in residential functioning. This situation may be partly due to the consistent finding that cognitive impairments are also not very strongly associated with the current presence of psychosis, a finding now replicated for functional capacity performance (9,19). Naturally, significant psychosis can be a major impediment to functioning, through its impacts on organization and judgment. However, this variable relationship between psychosis and outcome is the basis for a minimal cross-sectional correlation.

Other symptoms of schizophrenia do impact on everyday functioning. Negative symptoms, for instance, have an impact on a number of elements of everyday functioning. An interesting example is that of social amotivation and its impact on social functioning. Social amotivation is a classical deficit symptom, wherein the individual with this symptom is not interested in or actively avoids social contact. This form of amotivation is probably related to anhedonia and other reduced levels of social reinforcement obtained from interactions (26). It has been shown that social amotivation is more strongly related to social outcomes than either neuropsychological performance or social skills measured with a structured assessment (15). This is an interesting result because of its intervention implications. Social skills training, although widely delivered, might be futile in an individual whose lack of motivation to engage in social activities is the origin of social functioning deficits.

There has been an extensive debate about the relationship between negative symptoms and cognitive deficits (27). Rather than present the details of the debate, we will simply say that several different studies have shown that the contributions of cognitive impairments and negative symptoms to real-world functioning can be quantified separately and that there is some overlap between negative symptoms and cognition, although that overlap is small compared to the much more substantial correlations between each of these domains and everyday outcomes.

Depression has been a partially overlooked phenomenon in schizophrenia, with somewhat less research than deserved by its prevalence and impact on the morbidity and mortality of the illness. It is clear that many people with schizophrenia have symptoms of depression and may meet criteria for major depression concurrently to schizophrenia. Mood symptoms, even mild to moderate ones, have also been shown to exert a negative influence on everyday functioning (28). In contrast to common clinical impression, this adverse influence is not because of a negative impact of depression on neuropsychological and functional capacity. The influence seems more direct, and in three studies (9,19,29) with different patient populations we have shown that depression severity is minimally correlated with performance on ability measures, while being moderately correlated with impairments in everyday functioning. In fact, in a recent set of analyses we completed, we found that depression was the strongest predictor of everyday functioning deficits, having a larger (albeit not significantly) impact on everyday outcomes than neuropsychological performance or functional capacity (29). Thus, depression is an important symptom to consider when attempting to identify the causes of disability in schizophrenia.

Anhedonia

For well over 100 years, the idea that anhedonia was a central feature of schizophrenia has been advanced, starting with Kraepelin and Bleuler. Recent advances in the study of negative symptoms have made strides in understanding the complex nature of alterations in hedonic capacity in people with schizophrenia (30).

Many everyday acts are likely performed because of their intrinsically reinforcing consequences. Recent research has suggested that different types of anhedonia may be operative in schizophrenia and major depression. In major depression, the modal phenomenon seems to be the reduced ability to experience pleasure after engaging in potentially pleasant acts (consummatory anhedonia). In schizophrenia, there seems to be preserved ability to experience pleasure (26), while deficits in the ability to anticipate pleasureable consequences (anticipatory anhedonia) apparently predominate. In anticipatory anhedonia, the positive consequences of previously performed behavior are difficult to recall and the motivation to repeat these acts is therefore reduced. Interestingly, the little research done on depression and anhedonia in people with schizophrenia suggests an increased frequency of consummatory anhedonia in individuals with schizophrenia who have depressive symptoms. Thus, depressed people with schizophrenia may have qualitatively similar hedonic deficits compared to people with major depression (31). Individuals with persistent cognitive deficits such as those seen in schizophrenia may also be unable to volitionally retrieve their memories of previous positive experiences, leading to an increase in the inability to anticipate the pleasurable consequences of every action.

Recent research has suggested that individuals who endorse current reduced levels of intrinsic motivation on a questionnaire receive less benefit from active treatments aimed at cognitive enhancement than more motivated individuals (32,33). Reduced motivation to exert effort, while still attending the sessions, may lead to less engagement in the task, possibly leading to less brain activation and promotion of cognitive remediation benefits. Treatment of anhedonia and related reductions in motivation would seem to be a critical goal for improving the functioning of people with schizophrenia.

Environmental factors

Environmental factors are clearly related to real-world functioning. People with schizophrenia typically start out with less intrinsic advantages than the population as a whole and their illness leads to additional reductions in opportunities. Individuals with lifelong disability are financially challenged and may not have the resources to pay for an independent residence, which, combined with having more modest familial resources, can lead to a cascade of disadvantage.

Financial disadvantage has other potential adverse impacts. Not having adequate clothing can lead to disadvantages in seeking employment, and being impoverished can also lead to reduced nutritional possibilities and dietary choices that lead to adverse health outcomes. Living in poor neighborhoods also increases the risk of becoming a crime victim, whether it is property crimes or physical assaults, and people with schizophrenia are disproportionately likely to be a victim of a violent crime. Further, living in poor neighborhoods also increases the logistical challenge for getting to work if one can obtain a job.

Other environmental factors are operative as well. Disability compensation and health insurance are intrinsically linked for many patients in America. Thus, seeking employment may lead to suspension of insurance benefits, and individuals wishing to pursue recovery and to seek employment may paradoxically run the risk of having to suspend their medication treatment for their illness. Several studies have shown that the single best predictor of not being employed with schizophrenia in America is disability compensation, not because $400 a month is adequate to live on, but due to the intrinsic link between disability compensation and health insurance, which makes seeking a job without health insurance benefits implausible (7,8).

Difficult economic times also impact people with schizophrenia disproportionately, because of cut-backs in support services and because individuals who are more qualified than they are may be competing for the same jobs or residences when the economy contracts.

Health status

Patients with schizophrenia have higher rates of obesity and attendant medical comorbidities (cardiovascular disease, diabetes, hypertension) than general population comparison samples (34,35). The current obesogenic environment has had a disproportionately large adverse impact on patients with schizophrenia. Several studies have pointed out how maladaptive lifestyles, including poor dietary choices, sedentary behavior, little physical exercise, and high rates of smoking, interact with treatment with antipsychotic medication to cause morbidity and mortality far exceeding population norms (36).

The propensity for schizophrenia to shorten lives is exacerbated by a relative lack of adequate medical screening, monitoring, and intervention for obesity and related metabolic comorbidities which spans health service delivery systems (37). This has led to the untenable situation that, despite treatment-related improvements in outcomes in the last decades with respect to psychiatric symptoms and quality of life, the mortality gap for patients with schizophrenia has not narrowed, but may actually be widening (38,39).

The impact of obesity and medical comorbidities on everyday disability in schizophrenia has received little attention and has never been quantified in the way that symptoms, cognition and functional capacity have been. In the psychiatrically healthy population, the magnitude of obesity, for example, correlates directly with the degree of disability in the performance of everyday activities (defined on a continuum between minor restriction and complete lack of ability to perform physical activities in relevant domains of life), with more severe degrees of obesity having a disproportionately larger negative impact (40).

Obesity-related impairments in mobility, flexibility, motor coordination, muscle mechanics, strength, and gait efficiency manifest themselves in difficulties with activities of daily living (ADLs) in such diverse areas as dressing, bathing, walking several blocks, climbing stairs, doing housework, shopping, using public transportation, and the performance of any sort of vigorous activities (41). These impairments are not just due to physical size and related impairments in mobility but can result from baseline dysfunction (e.g., reduced mobility, flexibility, and persistence) or can also be associated with the occurrence of medical conditions caused or worsened by obesity. From a medical mechanistic perspective, atherosclerotic, hyperglycaemic and hypertensive end-organ damage may cause decline in cognitive, motoric, and gait abilities (40). Examples would include stroke, heart disease, vascular dementia, poor wound healing, and claudication among other conditions.

Obese people with schizophrenia may experience qualitatively similar impairment in physical functioning and resultant disability, compared to people without mental illness. Indirect supporting evidence comes from observations of impairments in quality of life, which obese people with schizophrenia report to experience even more as physical than psychological problems, resulting from perceived physical limitations (42,43). When these impairments are combined with the impairments associated with severe mental illness, there may be additive or even interactive influences.

Physical fitness

Patients with schizophrenia in America are much less physically fit than their mentally healthy counterparts. Their physical functional capacity, that is the ability to sustain physical activity, is markedly impaired (44,45). Causes include reduced heart and musculoskeletal strength, endurance, speed, and, perhaps, flexibility. Pulmonary disease, possibly from a high prevalence of tobacco use, is experienced as rate-limiting shortness of breath beyond a certain activity threshold. The presence of low levels of pulmonary disease, then, may have a negative impact on moderately strenuous physical activities, which become difficult to pursue (46). At the same time, anaerobic activities – those that require the greatest physical efforts – may be impossible to complete, which has multiple functional implications (47). On a continuum of worsening impairment in everyday activities, patients, for example, may elect not to grocery shop, come for appointments, engage in vocational activities or physical exercise prescription, interact with peers or socialize effectively, because the physical demands are unpleasantly high or simply unattainable.

The lack of physical activity paired with sedentary behavior and combined with adverse effects of various treatments leads to a cycle of worsening in self-efficacy, obesity, and disability. In mentally healthy people, improving physical fitness increases the ability to engage in meaningful everyday activities in social, vocational and independence domains, and reduces physical disability (48). We hypothesize that similar reductions in physical disability and improvements in ADLs can be expected in patients with schizophrenia. Because some of the above-mentioned clinical variables – for example, cognitive performance, motivation, or negative symptoms – may interfere with effective delivery of interventions to improve physical fitness in schizophrenia, special programs may be necessary.

Thus, physical limitations may exacerbate the functional deficits which can be produced by cognitive, symptomatic and functional capacity limitations. These physical limitations further reduce real-world performance in areas where the intrinsic limitations of schizophrenia are also operative. Thus, the cascade of influences on everyday functional impairment include deficits in cognition, functional capacity, the presence of specific symptoms and, newly introduced, the presence of multiple physical limitations associated with abnormalities in health status.

CONCLUSIONS

Disability in schizophrenia results from a cascade of multiple influences. These include ability variables such as cognition and functional capacity which have been studied in detail recently, as well as certain clinical symptoms. These variables have been quantified in several studies and reviews, leading to the conclusion that they account for about half of the measurable variance in everyday functioning. Environmental factors influence real-world functioning to a substantial extent, as evidenced by studies on the relationship between compensation and vocational and residential outcomes.

We suggest that there is an additional influence: the correlates of poor health status may be a predictor as well. This influence operates at several levels. There are direct impairments associated with size, mobility, and flexibility. Further, the underlying physiological impairments directly lead to deficits in everyday functioning, possibly through modification of cognitive abilities. In addition, stigma, a potent influence on outcomes in severe mental illness in any case, is likely amplified when obesity enters the equation.

The influence of health status on outcome in schizophrenia seems apparent, but has not been studied in the same detail as other determinants of outcome. We believe that future studies aimed at prevention and treatment of metabolic syndromes should also quantify the influence of these variables on everyday outcomes in critical functional domains.

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Classification of feeding and eating disorders: review of evidence and proposals for ICD-11

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Current classification of eating disorders is failing to classify most clinical presentations; ignores continuities between child, adolescent and adult manifestations; and requires frequent changes of diagnosis to accommodate the natural course of these disorders. The classification is divorced from clinical practice, and investigators of clinical trials have felt compelled to introduce unsystematic modifications. Classification of feeding and eating disorders in ICD-11 requires substantial changes to remediate the shortcomings. We review evidence on the developmental and cross-cultural differences and continuities, course and distinctive features of feeding and eating disorders. We make the following recommendations: a) feeding and eating disorders should be merged into a single grouping with categories applicable across age groups; b) the category of anorexia nervosa should be broadened through dropping the requirement for amenorrhoea, extending the weight criterion to any significant underweight, and extending the cognitive criterion to include developmentally and culturally relevant presentations; c) a severity qualifier "with dangerously low body weight" should distinguish the severe cases of anorexia nervosa that carry the riskiest prognosis; d) bulimia nervosa should be extended to include subjective binge eating; e) binge eating disorder should be included as a specific category defined by subjective or objective binge eating in the absence of regular compensatory behaviour; f) combined eating disorder should classify subjects who sequentially or concurrently fulfil criteria for both anorexia and bulimia nervosa; g) avoidant/restrictive food intake disorder should classify restricted food intake in children or adults that is not accompanied by body weight and shape related psychopathology; h) a uniform minimum duration criterion of four weeks should apply.

Key words: Feeding disorder, eating disorder, classification, diagnostic stability, cross-cultural psychiatry, developmental psychopathology

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The classification of feeding and eating disorders in the ICD-10 and DSM-IV is unsatisfactory. The deficiencies of these systems are most evident in four facts. First, the majority of patients presenting with eating-related psychopathology do not fulfil criteria for a specific disorder and are classified in the residual "other" or "not otherwise specified" categories. Second, most individuals with an eating disorder sequentially receive several diagnoses instead of a single diagnosis that would describe the individual's problems at various developmental stages. Third, most recent clinical trials have used modified diagnostic criteria that may better reflect clinical practice, but deny the purpose of the classification as a means for communication between clinicians and researchers. Fourth, although childhood feeding disorders are typically described in the history of adolescents and adults with eating disorders, there is little research on the developmental continuity between childhood, adolescent and adult disorders that involve aberrant eating behaviours. Issues have also been raised about developmental and cultural dependencies of feeding and eating disorders as currently conceptualized.

Given these problems, it is not surprising that the World Health Organization (WHO) and the American Psychiatric Association are contemplating significant changes in classification. A number of proposals for changes have been made. The purpose of this article is to summarize the issues in the classification of feeding and eating disorders, review relevant aspects of evidence, and make proposals for modifications in the context of the development of ICD-11.

THE INTERNATIONAL CLASSIFICATION OF DISEASES

The primary purpose of the International Classification of Diseases (ICD) is to facilitate the work of health professionals in various clinical settings across the world. Therefore, the primary requisite for ICD diagnostic categories is clinical utility, and evidence from clinical and epidemiological research is given more weight than data from basic and etiological research (1). Attention is paid to global cross-cultural validity and the needs of health professionals from medium and low income countries (1).

Several conceptual directions have been proposed for the ICD-11 (2). First, to reflect the growing evidence on continuity between child, adolescent and adult psychopathology, it has been proposed that the grouping of disorders with onset usually occurring in childhood and adolescence should be removed. Instead, disorders should be organized in groupings by psychopathology and a life-course approach should be adopted to conceptualize child, adolescent and adult manifestations of the same disorders.

Second, it has been agreed that the ICD-10 and DSM-IV contain an excessively large number of over-specified diagnoses, leading to artificially high rates of comorbidity and frequent use of the uninformative "not otherwise specified" and "other" categories (2). It has been proposed that evidence is required not just for changing or adding diagnostic categories but also for retaining existing ones. The overuse of the "not otherwise specified" categories should be reduced by revising the boundaries of specific disorders to include most clinically significant presentations.

Third, to best serve the clinical use, the ICD takes a prototypic approach in which presentations characteristic of each diagnostic category are described in a narrative format, which most health professionals find easier to use in practice (3,4). The ICD avoids the use of exact count, frequency and duration criteria to modulate diagnostic thresholds. Since most duration criteria for various disorders are not based on evidence and are difficult to memorize and apply, it has been proposed that a uniform duration criterion of four weeks should be adopted, with qualified exceptions for disorders which require rapid clinical attention (e.g., delirium, mania and catatonia) or that manifest by relatively brief events (e.g., intermittent explosive disorder).

Fourth, it has been proposed that categories with some evidence of clinical usefulness, but insufficient evidence for validity of specific criteria, should be included in the main body of the ICD, but signposted as categories that require further testing.

Fifth, to reflect the evidence that most mental disorders are multifactorial, it is proposed to remove the distinction between organic and functional forms of disorders.

CLINICAL EVIDENCE AND DIAGNOSTIC CRITERIA

The most important reason against changing the current diagnostic criteria is that it could invalidate available evidence. It is therefore important to assess the clinically relevant evidence and its relationship to classification. We have reviewed recent clinical trials on treatments of eating disorders published in six influential child and general psychiatry journals (*Journal of the American Academy of Child and Adolescent Psychiatry, Journal of Child Psychology and Psychiatry, American Journal of Psychiatry, Archives of General Psychiatry, British Journal of Psychiatry and Psychological Medicine*) between January 2000 and May 2011.

We identified 18 clinical trials (Table 1). Seven trials tested treatments for anorexia nervosa. Of these, three (published between 2000 and 2003) used "strict" DSM-IV or ICD-10 criteria. Four more recent trials (published between 2005 and 2010) used broader criteria, relaxing the weight and/or the amenorrhoea criterion. Eleven trials tested treatments for bulimia and related conditions. Three of these (published between 2000 and 2003) applied "strict" DSM-IV or DSM-III-R criteria. Eight of these trials (published between 2001 and 2009) used broader criteria, including bulimic-type eating disorders not otherwise specified or all eating disorders without underweight in addition to bulimia nervosa.

We conclude that the clinical trial literature reflects the deficiencies of the current diagnostic systems by broadening the diagnostic criteria in attempts to reflect clinical reality. No clinical trial published in the last seven years in the six journals used DSM-IV or ICD-10 criteria exactly. The result is that inclusion criteria differ between trials and the classification has effectively lost its purpose in defining the same group of patients across research studies and clinical settings. We conclude that changes in classification will not invalidate useful evidence, because most recent evidence is based on modified diagnostic criteria.

DEVELOPMENTAL CONTEXT

An important issue is the relationship between feeding and eating disorders. Feeding problems and selective eating in childhood have been described in the history of patients with eating disorders since the early case reports (23), but there has been little research on the continuity between feeding and eating disorders. The available research suggests a degree of continuity of eating problems from infancy to adulthood (24-26). For example, in a large prospective study, feeding problems in infancy and undereating in childhood predicted anorexia nervosa in adulthood with odds ratios of 2.6 and 2.7 respectively (26). For bulimia nervosa, the evidence is limited to a retrospective study showing that history of overeating and rapid eating in childhood was more common in women with bulimia nervosa than in their unaffected sisters (25). However, long-term follow-ups of individuals diagnosed with feeding disorders in childhood are lacking. At the same time, clinical trends indicate that the boundary between feeding disorders of childhood and eating disorders is problematic. On the one hand, there is a trend for younger and younger children to present with symptoms resembling "adult" eating disorders (27). On the other hand, many adults presenting with underweight, restrictive and selective eating lack the typical body-weight and shape related psychopathology that characterizes eating disorders and may be better described by criteria of feeding disorders (28-31).

It has been pointed out that similarity between child and adult manifestations of eating-related psychopathology might have been obscured by the fact that existing criteria are rigidly applied without sensitivity to developmental stage (28,32-34). This is most apparent in the requirement for self-reported cognitions regarding weight, shape and body image. It has been argued that children and some adolescents may not be able to formulate and communicate such concerns due to incompletely developed capacity for abstract thinking (28,32-34). It has been proposed that behavioural indicators of such concerns should be accepted as a basis for diagnosis, whether they are observed by clinicians or reported by parents, teachers or other adults (32,35,36). For example, observation of the child frequently checking her/his weight and shape or expressing aspects of shape/weight-related self-image in drawings might be taken into account as indicators of preoccupation with weight and shape in the context of pathological eating behaviours. In the case of anorexia nervosa, it has also been suggested that restrictive and binge-purge subtypes often represent developmental stages of the same disorder – children and younger adolescents usually present with the restrictive type, and binge-purging behaviours develop in a proportion of individuals at later stages (32,35,37).

The summary of evidence suggests that a single classification applied across age groups and sensitive to developmen-

Table 1 Diagnostic inclusion criteria in recent clinical trials in eating disorders

Author	Year	Treatment	Comparator	N	Age group	Target group	Inclusion diagnostic criteria
Anorexia nervosa and related conditions							
Lock et al (5)	2010	Family therapy	Individual therapy	121	Adolescents	Anorexia nervosa	DSM-IV excluding the amenorrhea requirement
Loeb et al (6)	2007	Family therapy		20	Adolescents	Anorexia nervosa	Anorexia nervosa or subthreshold anorexia nervosa
Lock et al (7)	2005	Family therapy (short)	Family therapy (long)	86	Adolescents	Anorexia nervosa	Slightly relaxed weight and amenorrhoea criteria
McIntosh et al (8)	2005	CBT/interpersonal	Clinical management	56	Adults	Anorexia nervosa	Strict or lenient weight criteria
Pike et al (9)	2003	CBT	Nutritional counselling	33	Adults	Anorexia nervosa	DSM-IV
Dare et al (10)	2001	Psychoanalytic, cognitive analytic, and family therapy	Clinical management	84	Adults	Anorexia nervosa	DSM-IV
Eisler et al (11)	2000	Multifamily therapy	Family therapy	40	Adolescents	Anorexia nervosa	DSM-IV or ICD-10
Bulimia nervosa and related conditions							
Fairburn et al (12)	2009	CBT	Wait list		Adults	Eating disorder	Any ED with BMI>17.5
Schmidt et al (13)	2008	Computerized CBT	Wait list	96	Adults	Bulimia nervosa	Bulimia nervosa or bulimic-type EDNOS
Schmidt et al (14)	2007	Family therapy	CBT	85	Adolescents	Bulimia nervosa	Bulimia nervosa or bulimic-type EDNOS
Le Grange et al (15)	2007	Family therapy	Supportive therapy		Adolescents	Bulimia nervosa	Bulimia nervosa or ‘partial’ bulimia nervosa
Banasiak et al (16)	2005	Guided self-help	Wait list	109	Adults	Bulimia nervosa	Full syndrome or sub-threshold
Walsh et al (17)	2004	Fluoxetine	Self-help	91	Adults	Bulimia nervosa	Subjective binges and 1x/week frequency
Carter et al (18)	2003	Self-help CBT	Wait list	85	Adults	Bulimia nervosa	DSM-IV
Palmer et al (19)	2002	Self-help CBT	Wait list	121	Adults	Bulimia disorders	Bulimia nervosa, partial bulimia nervosa or binge-eating disorder
Hsu et al (20)	2001	Cognitive therapy	Nutritional counselling	100	Adults	Bulimia nervosa	DSM-III-R
Safer et al (21)	2001	Dialectical behaviour therapy	Wait list	31	Adults	Bulimia nervosa	One binge/purge episode per week
Agras et al (22)	2000	CBT	Interpersonal therapy	220	Adults	Bulimia nervosa	DSM-III-R

CBT - Cognitive behaviour therapy; BMI - body mass index; ED - eating disorder; EDNOS - eating disorder not otherwise specified

tally specific manifestations would more accurately describe the course of these disorders and reflect the continuity between child, adolescent and adult manifestations than the current system.

CULTURAL CONTEXT

Eating plays an important role in most cultures. Acceptable eating habits vary widely between religious and ethnic groups, and eating disorders have been conceptualized as culture-bound syndromes (38). In this context, it is notable that most published research is based on North American and European populations. In the last decade, reports on eating disorders and related conditions from various countries, including low income countries and countries undergoing sociocultural transitions (39-41), have accumulated which may inform a classification that is sensitive to local variation (42).

Anorexia nervosa occurs in all cultures, but the incidence is higher among individuals who have been exposed to Western culture and values and those who live in relative affluence (40,41,43). For example, in the Caribbean island of Curaçao, all identified cases of anorexia nervosa were among young women of mixed ethnicity who had spent time in the USA or the Netherlands; there were no cases of anorexia nervosa among the majority of young women in the island, who are black and had not been abroad (40,44). Anorexia nervosa is relatively rare among black women in Africa, the Caribbean, and the USA (45-47). In the Czech Republic, the incidence of anorexia nervosa increased sharply after the fall of the iron curtain, that was associated with exposure to Western-style media and values (41).

In addition to influence on prevalence, culture also shapes the manifestation of anorexia nervosa. For example, in South-East Asia, a larger proportion of patients with anorexia nervosa report abdominal discomfort and other factors as a rationale for restrictive eating (28,48). However, typical presentations with weight and shape-related preoccupations and fear of gaining weight have also been recorded in most non-Western cultures (28,48-50), and the rates of full-syndrome anorexia nervosa in South East Asia are intermediate between Western countries and African populations (50). There is evidence that patients who initially present with other rationales often develop intense fear of weight gain (51) and that the proportion of patients reporting fear of weight gain increases with exposure to Western cultural values (52). This suggests that weight-phobic and non-weight-phobic anorexia are context-dependent manifestations of the same disorder. Therefore, it is recommended that fear of weight gain is not required for the diagnosis of anorexia nervosa, provided that behaviours maintaining underweight or other psychopathology suggestive of eating disorder are present.

Bulimia nervosa has been conceptualized as strongly bound to Western culture (38). The disorder is more common among individuals who were exposed to Western culture and who grew up in relative affluence (38,41,43). Although all component symptoms of bulimia nervosa occur in non-Western low income countries, the syndrome appears to be less common in those countries than in North America and Western Europe (43,49,50,53). The incidence of bulimia nervosa increases in parallel with exposure to Western media and values and correlates with the degree of acculturation (41,43,52,54). Therefore, the manifestation of bulimia nervosa and its separation from normality have to be considered within cultural context. For example, culturally sanctioned feasting followed by the use of indigenous purgatives in Pacific islands should not be medicalized, but the use of the same herbal purgatives in the context of typical psychopathology and outside the culturally sanctioned events is a symptom of an eating disorder (39,55). The motives for pursuing a thin body shape may also depend on socioeconomic context. For example, in societies undergoing socioeconomic transition, a thin body can be perceived as a valuable commodity that may help obtain a lucrative job and guarantee career success (42,56,57). There is little evidence on whether such cultural variations in manifestation have an impact on the long-term prognosis and treatment response. In the USA, patients with bulimia nervosa belonging to ethnic minorities appear to respond to the same psychological treatments as European Americans (58).

Binge eating disorder is relatively equally distributed across countries and ethnic groups, but details of manifestation vary in culture-dependent manner. Black women with binge eating disorder are on average heavier, have fewer concerns related to body weight, shape and eating, a less frequent history of bulimia nervosa, but similar levels of depressive symptoms and impairment compared to white women with the same diagnosis (59). In general, the associations between binge eating, obesity, weight and shape dissatisfaction, and general psychopathology hold across ethnic groups (60,61). While no modifications of diagnostic criteria are required, the lower rates of treatment among black women with binge eating disorder suggest that increased alertness of clinicians to eating disorders in non-European ethnic groups is warranted (59).

TEMPORAL INSTABILITY AND DIAGNOSTIC TRANSITIONS

Longitudinal follow-up studies of anorexia and bulimia nervosa have found that a significant proportion of subjects change diagnostic status to another eating disorder (62-67). Diagnostic crossovers are more common in the initial years of illness and follow a predictable sequence. Typically, restrictive anorexia nervosa mutates into binge eating/purging anorexia nervosa, before crossing over to bulimia nervosa (68-72). Crossover in the opposite direction is less common. While one-third of individuals with an initial diagnosis of anorexia nervosa develop bulimia nervosa during a five-to-ten year follow-up, only 10-15% of those with an initial diagnosis of bulimia nervosa develop anorexia (68,70,72). Larger proportions of subjects with an initial diagnosis of bulimia nervosa develop binge eating disorder or eating disorder not otherwise specified (EDNOS) (65,68). There are also numerous transitions between specific eating disorder categories and EDNOS, with the latter often representing an intermediate state on the way to recovery (68,73,74).

The diagnostic transitions may also extend to a relationship between feeding disorders in childhood and eating disorders in adolescence and adulthood. Restrictive eating and hyperactivity are often present in children and adolescents who deny any motivation of these behaviours by fear of gaining weight, but who later demonstrate weight phobia and receive a diagnosis of an eating disorder (28,33,35).

Importantly, a significant minority of cases show repeated diagnostic crossovers. For example, half of those who transit from an initial anorexia nervosa to bulimia nervosa experience a “recurrence” of anorexia nervosa within a few years (70). In long-standing eating disorders, diagnostic transitions are the rule, with most patients who remain ill for at least several years changing diagnostic status one or more times (68,70,72). Comorbid depression and alcohol abuse are associated with more diagnostic instability in eating disorders (68). With these rates of transitions, it is clear that the sequential diagnoses represent stages of the same disorder rather than separate disorders.

The apparent sequential comorbidity of various eating disorders is probably an artefact of applying a system of overly specified diagnostic categories with overlapping psychopathology. In ICD-10 and DSM-IV, the various eating disorder categories are mutually exclusive, so they cannot be diagnosed at the same time. However, there is no such restriction for sequential diagnoses, and neither ICD-10 nor DSM-IV takes the longitudinal course of psychopathology into account. This state of affairs is clearly unsatisfactory. On the one hand it creates an impression of an overly complex pattern of sequential comorbidity, on the other hand it misses important prognostic information. For example, it was shown that, among patients with current bulimia nervosa, a history of anorexia nervosa is associated with reduced chance of recovery and much larger risk of transiting into anorexia nervosa (75). It has been proposed that bulimia nervosa should be subtyped according to history of anorexia nervosa (75). A more radical solution to the problem of spurious sequential comorbidity may require restrictions on frequent changes of diagnostic categories (e.g., the diagnosis of anorexia nervosa may be retained for a year after weight normalization) or establishing a combined eating disorder category to capture cases that sequentially fulfil criteria for both anorexia and bulimia nervosa and have a tendency to repeatedly change presentations.

FEEDING DISORDERS

Feeding disorders of infancy/childhood and eating disorders of adolescence/adulthood are classified in different sections of ICD-10 and DSM-IV. Feeding disorders of childhood/infancy include refusal of food and selective (faddy) eating, regurgitation of food with or without re-chewing, or eating of non-edible substances (pica). This classification has serious problems as it includes one heterogeneous condition with unclear boundaries from eating disorders and two less common and more specific conditions that occur in both children and adults (76,77).

Alternative classifications of feeding disorders have been proposed, that attempt to reconceptualize this heterogeneous category as four to six specific categories (78-80) and/or emphasize the relational context of feeding and the role of primary caregiver (80,81). The problems are that the specific subtypes leave a large number of clinical presentations unclassified and some require allocation of a single etiology to disorders that are multifactorial. As a result, none of these proposals has been accepted. The situation is clearer for pica and regurgitation, which are relatively distinct syndromes. However, both of these are frequent in adults and in the context of other mental disorders (e.g., autism and learning disability) and physiological conditions (iron deficiency, pregnancy). It is proposed that pica and regurgitation disorder should be diagnosed based on behaviour and irrespective of age (76).

Avoidant/restrictive food intake disorder (ARFID)

Avoidant/restrictive food intake disorder (ARFID) has been proposed to replace the non-specific category of feeding disorder of infancy or early childhood and, in addition, explicitly include adolescent and adult cases presenting with psychologically motivated inadequate food intake for reasons related to the physical properties or feared consequences of eating specific types of food other than effects on body weight and shape (76).

ARFID overlaps with anorexia nervosa in terms of restrictive food intake and the resulting underweight, but differs in psychopathology and motives for restrictive eating. These include avoiding types of food of specific colour or texture or limiting food intake to a small number of specific "safe" types of food because of perceived health consequences. ARFID is typically not associated with gross disturbance of body image.

Since there is vast normal variation in eating habits among children and adults, differentiation from normality is important. As a rule, ARFID should only be diagnosed when the restrictive/avoidant eating is a cause of inadequate nutrition that may be associated with delayed growth in children, weakness, anaemia or other medical consequences in any age group, or inadequate development of the foetus in pregnant women. Dietary practices that are endorsed by large groups of people, such as vegetarianism or religious fasting, do not constitute a basis for diagnosing ARFID.

The proposed ARFID category conforms with the general direction of merging feeding and eating disorders and opening diagnostic categories to all age groups. It also provides an appropriate category for some cases that previously received the diagnosis of EDNOS. Since ARFID is a new concept, we propose that it is included in ICD-11 as a category that requires further testing. In particular, the boundaries between ARFID and anorexia nervosa, including the culturally determined non-fat phobic presentations, and between ARFID and specific phobias need to be explored. It is also hoped that the inclusion of ARFID will stimulate research on continuity between child and adult presentations.

Pica

Pica describes persistent eating of non-food substances, such as earth, chalk, metal or plastic objects, hair or faeces. In ICD-10 and DSM-IV, pica is included among the disorders with onset usually occurring in childhood and adolescence, and adult presentations are coded elsewhere (e.g., as an EDNOS). Since pica frequently first comes to attention in adulthood, it is proposed that there are no age restrictions for its diagnosis (76). Pica only requires a diagnosis if it is severe, leads to adverse consequences (e.g., heavy-metal poisoning or parasite infestation), does not exclusively occurs during socially sanctioned events (e.g., religious rituals) or culturally accepted practice (e.g., eating of clay in Nigeria) and is not fully explained by another mental disorder (e.g., psychosis or obsessive-compulsive disorder). Eating non-food substances also frequently occurs in pregnancy, and pica should not be diagnosed in pregnant women unless it is of unusual extent or causes health concerns.

Regurgitation disorder

Regurgitation disorder describes repetitively bringing previously swallowed food from stomach back to the mouth and either spitting or re-chewing it. It was included in ICD-10 and DSM-IV under the name of rumination disorder. Since rumination is commonly used to describe a psychological process involving repetitive thoughts, we propose changing the name to "regurgitation disorder" to avoid confusion. Regurgitation disorder was previously classified in the section of disorders with onset specific to childhood, but it frequently first comes to attention in adulthood. Therefore, it should be diagnosed without age restrictions (76).

EATING DISORDERS NOT OTHERWISE SPECIFIED (EDNOS)

The field of eating disorders has evolved around the concepts of anorexia and bulimia nervosa. However, when DSM-IV criteria are applied to patients presenting to eating disorders services, the most common diagnosis is EDNOS. The proportion of patients diagnosed with EDNOS is consistent across settings and age groups, with approximately 60% of patients referred to child, adolescent or adult eating disorders services classified as EDNOS (82-84).

In ICD-10, EDNOS is split between atypical anorexia nervosa, atypical bulimia nervosa, other eating disorder, and eating disorder, nonspecified. However, this does not improve the matters, since the diagnoses of atypical anorexia and atypical bulimia are highly unreliable and nearly 40% of patients still receive the "other" or "unspecified" residual diagnoses (82). There is also confusion about the meaning of "atypical anorexia nervosa". In ICD-10, atypical anorexia nervosa is defined as a condition that resembles anorexia nervosa, but does not fulfil all of the diagnostic criteria (e.g., there is no amenorrhoea or not a sufficient degree of weight loss). In the literature, the term "atypical anorexia nervosa" is used more narrowly to describe an eating disorder with significant underweight but no concerns about body shape or weight (85,86). For these reasons, it is concluded that ICD-10 is as unsatisfactory as DSM-IV.

The cause of the current problems is that criteria for specific eating disorders, such as anorexia and bulimia nervosa, are too narrow and rigid. Indeed, the definitions of eating disorders are somewhat anomalous by requiring the presence of all criteria, rather than a minimum number of a longer list of symptoms. For example, the diagnosis of depressive episode requires five out of nine symptoms, but the diagnosis of anorexia nervosa requires four out of four (underweight, fear of weight gain, body image disturbance and amenorrhoea). This rigid requirement means that cases where any one of the four symptoms is absent are diagnosed as EDNOS, even if the presentation otherwise resembles typical anorexia nervosa. A significant proportion of EDNOS is composed of such subthreshold cases. Common types of EDNOS include anorexia nervosa without amenorrhoea, anorexia nervosa without fear of gaining weight, anorexia nervosa not fulfilling the weight loss criterion, bulimia nervosa with binges that are not objective (i.e., do not involve an amount of food that is definitely larger than what most people would eat), bulimia without bingeing (purging disorder), bulimia without purging (binge eating disorder), and bulimia nervosa with bingeing and compensatory behaviours occurring less than twice a week for three months (29,84). For example, in a specialized clinic for eating disorders, subthreshold anorexia and bulimia nervosa accounted for 83% of EDNOS (84).

Having most patients diagnosed with EDNOS is unhelpful for several reasons. First, EDNOS is a highly heterogeneous group in terms of presentation, prognosis, physical sequelae, and treatment outcomes (37,84). Second, most cases of EDNOS represent a phase of an eating disorder in individuals who fulfilled criteria for anorexia or bulimia nervosa at other times (29,73). Third, the residual character of this category implicitly conveys that it is a less severe disorder. This contrasts with the demonstrated severity, impairing character, and a grave prognosis including elevated mortality in EDNOS (87,88). Finally, EDNOS has no specific implications for treatment selection or service provision. There has been an attempt to introduce a "transdiagnostic" treatment that would be effective for most types of eating disorders, but the published evidence on this treatment excludes eating disorders with underweight and subsequently better fits a broader category of bulimia nervosa (12). A similar approach has been taken in recent clinical trials in bulimia nervosa, which also included bulimia-like EDNOS (13-15). We conclude that continued widespread use of EDNOS would be unhelpful and potentially harmful.

A number of proposals have been made to reduce the reliance on EDNOS. Most proposals include broadening of diagnostic criteria for anorexia and bulimia nervosa so that they subsume a proportion of cases currently diagnosed with EDNOS. The proposed expansions of criteria for anorexia nervosa include: dropping the requirement for amenorrhoea, relaxing the underweight criterion, and relaxing the requirement for fear of weight gain. The proposed broadening of criteria for bulimia nervosa include reducing the frequency requirement for bingeing and compensatory behaviour, and dropping the binge "objectivity" criterion (requirement that a binge involves eating an unusually large amount of food). Preliminary studies in adolescents and adults indicate that dropping the binge objectivity criterion has the greatest impact on reducing the use of the residual category (29,84). Depending on the degree of broadening, the extended categories can reduce the use of EDNOS moderately (68,89) or nearly eliminate its use (90).

The other set of proposals include introducing more specific diagnostic categories. There is most support for the introduction of binge eating disorder (91,92). Other proposed additional categories include purging disorder (93) and night eating syndrome (94). A mixed category of eating disorder with features of both anorexia and bulimia nervosa has been proposed to capture the cases that do not easily fit the prototype of one specific eating disorder (95). Finally, there is a proposal that includes relaxing the strict requirement that all defining symptoms must be present to make a diagnosis and suggests a list of symptoms of which one or more needs to be present to fulfil a diagnostic criterion (96).

While all of the above proposals appear sensible and each would reduce the need for EDNOS, it is difficult to estimate the impact of combining aspects of the various proposals. There are also problems with adopting some of the proposals entirely. For example, the alternative classification system proposed by Hebebrand and Bulik (96) represents conceptually the strongest departure from current classification, by removing the requirement for all symptoms to be present, but it only concerns anorexia nervosa and it allows relatively nonspecific symptoms such as irritability and depressed mood to count towards the diagnosis, raising concerns about how well it would differentiate against disorders from other groupings. On balance, we favour the combination of introducing binge eating disorder as an additional specific category with substantial broadening of diagnostic criteria, similar to the proposal by Walsh and Sysko (97), which has been shown to nearly eliminate the use of EDNOS (90) and is consistent with recent trends in clinical trial literature (Table 1).

It is unclear whether purging disorder or night eating syndrome will still be needed when the criteria for anorexia nervosa, bulimia nervosa and binge eating disorder are broadened. The available evidence suggests that most individuals with purging disorder have subjective binges, therefore the removal of requirement for an unusually large amount of food to be eaten during a binge may be sufficient to classify most of these subjects as bulimia nervosa, which does not differ from purging disorder in terms of impairment and response to treatment (12,98). Most cases of night eating syndrome can be subsumed under the broad category of binge eating disorder. The one remaining issue concerns cases that frequently change presentation and sequentially fulfil criteria for different eating disorders. Following suggestions by Fairburn (95), we support the use of a mixed category. However, to avoid redundancy when implemented alongside broader specific categories, we propose reserving such category for the relatively severe cases that fulfil criteria for both anorexia and bulimia nervosa either concurrently or sequentially. This category may be more appropriately called "combined" rather than "mixed" eating disorder.

ANOREXIA NERVOSA

Anorexia nervosa is the prototypical eating disorder that has been consistently described since the 19th century (99,100). In ICD-10 and DSM-IV, it is defined by four criteria, all of which are required for diagnosis. Three of these are essentially the same in the two systems: low body weight (maintained at body mass index, BMI<17.5 or under 85% of weight expected for height, age and sex), body image disturbance and amenorrhoea. The fourth criterion differs between the two classifications: in ICD-10, it is a requirement that low weight is self-induced through dietary restriction and/or purging behaviour; in DSM-IV, intense fear of gaining weight or becoming fat is required. In DSM-IV, anorexia nervosa is further divided into restrictive and binge-eating/purging subtypes.

These classifications have been criticized for several reasons. First, the requirement of all four criteria excludes a significant proportion of clinical presentations that fit the prototype of anorexia nervosa. The requirements of amenorrhoea, low body weight threshold, and fat phobia have all been criticized on this ground. Second, these criteria are insensitive to cultural variations; fear of gaining weight is reported by a smaller proportion of cases in non-Western cultures. Third, it has been argued that extant criteria omit hyperactivity, which is a salient feature in the presentation of anorexia nervosa (96). The problems with present diagnostic criteria are reflected in the fact that most recent clinical trials have used broader inclusion criteria, mostly relaxing the weight and amenorrhoea criteria (Table 1). We will first review the rationale for retaining or dropping each specific criterion and then move to the diagnostic concept and proposals for revision.

Amenorrhoea, defined as absence of three consecutive menstrual bleedings, is a common feature of anorexia nervosa that is strongly associated with underweight and excessive exercise and may have prognostic implications for bone mineral density and fertility outcomes. However, several facts make amenorrhoea problematic as a diagnostic criterion. First, it is not applicable to girls prior to menarche, to post-menopausal women, women taking hormonal preparations and men. The ICD-10 has proposed a male equivalent of hormonal disturbance manifest as "loss of sexual interest and potency", which is however rarely assessed or researched and whose contribution to the diagnosis is unclear. Second, a significant minority of women (5 to 25% in clinical samples) who otherwise fulfil criteria for anorexia nervosa and require clinical attention menstruate and consequently are classified as EDNOS. Third, the requirement of missing three consecutive menstrual bleedings interferes with timely diagnosis and treatment. There is a broad agreement that amenorrhoea should not be required for the diagnosis of anorexia nervosa, but should be recorded since it may be an indicator of severity and may help distinguish between constitutional thinness and anorexia nervosa (101).

The low weight criterion is the defining feature of anorexia nervosa, but its exact specification has been discussed. A number of women who fit the prototype of anorexia nervosa narrowly miss the weight criterion of BMI<17.5 (or body weight less than 85% of what is expected for age and height) and are classified as EDNOS. Depending on body constitution, the above threshold for underweight may be seen as too high or too low in individual cases. Therefore, it has been proposed that this threshold should be relaxed and/or left to clinical judgement (www.dsm5.org). This proposal has the advantage of reducing the use of the uninformative EDNOS, but risks loss of objectivity and important information. Severe underweight has been repeatedly shown to be a strong predictor of poor prognosis and mortality (102-105) and is routinely used as an indication for inpatient treatment. We propose relaxing the underweight criterion to the WHO definition of underweight (BMI<18.5) with a room for clinical judgement, and recording a history of severe underweight (e.g., BMI<14.0) as a severity qualifier (with dangerously low body weight). Low body weight is only considered a symptom of anorexia nervosa if it is due the individual's eating behaviour rather than factors such as a medical condition or unavailability of food.

Morbid fear of gaining weight is required for diagnosing anorexia nervosa in the DSM-IV. In the ICD-10, fear of fatness is included under the body-image distortion criterion. This has been perhaps the most discussed criterion. The requirement of fear of fatness is problematic from both a developmental and a cultural perspective. Developmentally, fear of gaining weight is rarely reported by children and may require an ability of abstract reasoning that only develops during adolescence (32). Cross-culturally, females with otherwise typical anorexia nervosa in non-Western countries less frequently report fear of fatness as the reason for self starvation (48,106). Even in Western countries, a significant minority of patients report no fear of weight gain and are consequently classified as EDNOS (106-108). It has also been pointed out that fat phobia often emerges during weight restoration in patients who previously denied any fear of gaining weight (51). The dependency on development, culture and illness stage argues against the usefulness of weight phobia as a diagnostic criterion. However, it has also been argued that fear of weight gain is part of the core defining psychopathology of anorexia nervosa (109). We propose extending this criterion to include preoccupation with body weight and shape, preoccupations with food and nutrition, and persistent behaviours that are intended to reduce energy intake or increase energy expenditure.

Body image disturbance is a striking aspect of anorexia nervosa and is required in both ICD-10 and DSM-IV. It includes both the perception of own body or its parts as larger than they are and the lack of recognition of the seriousness of underweight. Body image disturbance often precedes other symptoms and its persistence upon weight recovery has prognostic significance. Only minor rephrasing of this criterion has been recommended for DSM-5 and we agree with retaining this criterion essentially unchanged. Cases of restrictive eating with no body image related psychopathology may better be classified as ARFID.

Hyperactivity is a remarkable feature of many cases of anorexia nervosa and is a differentiator from other causes of starvation. Hyperactivity is not among the criteria in either ICD-10 or DSM-IV. Its inclusion under the behavioural indicators of anorexia nervosa has been recommended (96). However, since hyperactivity is not universally present in all cases of otherwise typical anorexia nervosa and its manifestation may depend on stage of illness, we propose to include it as a supporting criterion, which may help differentiate between anorexia nervosa and normality in cases with borderline underweight.

In the DSM-IV, anorexia nervosa is further classified into restrictive and binge-eating/purging subtypes according to the presence of bingeing and purging behaviours. This subtyping has been criticized since the subtypes often represent developmental stages of the same illness and do not consistently predict outcome (69). While children and younger adolescents usually present with restrictive symptomatology, binge-purging behaviours develop in the majority at later stages (69,110). Purging behaviour has been found to predict poor outcome in some studies but not in others (69,105,110). Binge-purge anorexia nervosa has a high rate of diagnostic transitions with bulimia nervosa (68,70). To avoid repeated diagnosis changes, we propose that anorexia nervosa with bingeing and purging behaviour should be classified as combined eating disorder. The proposed category of "combined eating disorder" will include cases that were classified as anorexia nervosa, binge-purge subtype as well as cases that display clinically significant anorectic and bulimic symptomatology sequentially.

BULIMIA NERVOSA

Bulimia nervosa was first described in 1979 as a variant of anorexia nervosa (111), and soon afterwards was accepted as a separate diagnosis. In ICD-10 and DSM-IV, bulimia nervosa is defined by three criteria: recurrent binge eating, recurrent compensatory behaviour, and preoccupation with own body weight or shape, all of which are required for making the diagnosis.

Overall, bulimia nervosa is a valid category (112) that is used in practice (113), and its treatment has a broad evidence base (114). However, various aspects of the binge eating criterion have been criticized for making the diagnosis too restrictive and resulting in a substantial proportion of patients with bulimia-like problems classified as EDNOS. The need for a broader diagnostic category is reflected in the clinical trial literature, with eight of the eleven recent trials using broader criteria (Table 1). The two aspects of the definition that have been relaxed in these trials and discussed in the literature are the amount of food eaten in a binge eating episode and the frequency of binge-purge behaviours.

We first consider the amount of food eaten. Both ICD-10 and DSM-IV specify that binge eating is only present when an unusually large amount of food is eaten in one go and the subject experiences loss of control over eating (i.e., feels unable to stop eating or limit the amount or type of food eaten). However, a number of reports have highlighted the fact that many patients report eating amounts of food that may objectively appear normal, but are subjectively considered too large (115,116). Episodes of eating that are accompanied by subjective loss of control but do not involve eating an unusually large amount of food are described as "subjective" binges (117). A number of studies have compared patients presenting with "subjective" and "objective" binges and found little or no clinically meaningful differences (116,118-121). While objective binge eating episodes may be associated with higher body mass index (116,119) and impulsivity (118), subjective and objective binge eating episodes show a similar pattern of psychiatric comorbidity (116,118-122), are associated with similar levels of service utilization (116,119) and have a similar response to treatment (12,120). The literature suggests that subjective experience of loss of control over eating is the core defining feature of binge eating that is associated with psychopathology and quality of life, irrespective of the amount of food eaten, in both adults (122,123) and children (124). It has therefore been proposed that the requirement for an unusually large amount of food should be removed (116,119). Dropping the requirement for an unusually large amount of food is the one modification that strongly reduces the use of EDNOS and allows most bulimia-like presentations to be classified as bulimia nervosa (29,84,90).

The other contentious aspect of the diagnostic criteria is the frequency of bingeing and purging behaviour that is required for the diagnosis. This criterion is handled differently in ICD-10 and DSM-IV. While ICD-10 simply requires binge eating and compensatory behaviours to be repeated, DSM-IV specifies a minimum frequency of two binge-eating/purging episodes per week for at least three months. Although there is a general consensus that the diagnosis should not be applied to cases with infrequent episodes of binge eating, there is no evidence supporting a specific frequency, and most researchers and clinicians suggest either removing or lowering the frequency criterion (125). Since there appear to be no meaningful differences between subjects who binge-eat twice or more versus those who binge eat once a week (126), a lowering or loosening of the frequency criterion appears to be in order. Although lowering the frequency requirement to once a week on its own has a relatively modest effect, in conjunction with allowing subjective binge eating episodes it leads to a substantial reduction in the use of EDNOS (29,90).

The requirement for dread of fatness (ICD-10) or an undue influence of body weight and shape on self-evaluation (DSM-IV) is adequate in most Western adult settings, but may be problematic in children and in non-Western cultures (28,32). It is proposed that this criterion be applied flexibly, include developmental-stage and culture-specific manifestations, and regard behavioural equivalents as indicators of eating-disorder specific psychopathology (32,42).

In the DSM-IV, bulimia nervosa is further classified into purging and non-purging subtypes. The non-purging subtype is defined by compensatory behaviours that are limited to fasting and exercising and represent a relatively small minority of patients with bulimia nervosa. In practice, subtyping of bulimia nervosa is little used (113) and there is virtually no evidence to support its validity or utility (127). In terms of severity, non-purging bulimia nervosa appears to be intermediate between purging bulimia nervosa and binge eating disorder (127). It has been proposed to either abandon subtyping or to remove the non-purging behaviours from the list of inappropriate compensatory behaviours that define bulimia nervosa (127). Adopting the latter proposal would mean that cases previously classified as non-purging bulimia would be diagnosed as binge eating disorder. An alternative proposal has been made to subtype bulimia nervosa based on the history of anorexia nervosa, which has more predictive validity (75). We think this proposal can be applied as part of the combined eating disorder. In the absence of evidence either way, we favour retaining non-purgative compensatory behaviours in the definition of bulimia nervosa.

BINGE EATING DISORDER

Binge eating disorder, characterized by recurrent binge eating without compensatory behaviours, was described in 1959, but only became a focus of clinical and research attention in the last two decades. It was not included in ICD-10, but was listed in DSM-IV as a provisional diagnosis in need of further testing. Since then, a large body of research has accumulated, and binge eating disorder is now considered a valid and useful category (91,92).

Binge eating disorder is strongly associated with obesity, with approximately two-thirds of affected individuals being obese. Binge eating disorder frequently co-occurs with other mental disorders, especially anxiety and depression (128), yet has been found to be distinct from these and not a mere indicator of general psychopathology (129). The distinction between binge eating disorder and bulimia nervosa is less clear-cut and in many cases the two categories may represent different stages of the same disorder (65,68). Patients with binge eating disorder are on average older than those of bulimia nervosa, and approximately two-thirds have a history of using inappropriate compensatory behaviours, suggesting a past diagnosis of bulimia nervosa (130). Although weight and shape concerns are not required for the diagnosis of binge eating disorder, they are commonly part of the presentation (131,132).

As in bulimia nervosa, the specific diagnostic criteria for binge eating disorder have been a subject of discussion. In DSM-IV, it was required that binge eating episodes consist in eating an amount of food that is definitely larger than what most individuals would eat in a similar situation, and that the individual experiences loss of control over eating (i.e., feels unable to stop eating or limit the amount or type of food eaten). However, similar to binges in bulimia nervosa, it was found that loss of control is the core defining feature of binging (133). Although the amount of food eaten is often large, it is less useful as a defining factor, because binges involving eating amounts of food that are objectively not unusually large but are considered large by the individual are associated with similar psychopathology and impairment (133). In addition, binge eating is frequently characterized by eating alone because of embarrassment, eating other types of foods, and feelings of guilt and disgust. DSM-IV requires that binge eating is associated with distress, and the validity of this additional criterion is generally supported (134).

The duration of a binge varies. Most episodes of binge eating last less than two hours, but extended binge eating has been described as binge days. The DSM-IV further required that binge eating be present in at least two days per week for at least six months. There appears to be little evidence supporting this frequency and the unusually long requested duration. Since binge eating disorder is often associated with rapid weight gain, waiting six months before establishing the diagnosis may be contraproductive. It has been shown that relaxing the frequency criterion to once a week would lead to only small increase in the rate of binge eating disorder (135).

In summary, there is a consensus that binge eating disorder is a valid and useful diagnosis. It is proposed that binge eating disorder be included in ICD-11. It is also proposed that the diagnostic criteria for binge eating disorder be broadened to include binges that do not involve eating an unusually large amount of food as long as there is definite loss of control over eating, binge eating is distinct from regular eating patterns and causes distress (97,116). There is no specific evidence to override the proposed uniform duration criterion. Therefore, the diagnosis of binge eating disorder may be appropriate if binge eating occurs regularly for at least four weeks. In less severe cases, longer duration may be needed to establish clinical significance.

EATING AND FEEDING DISORDERS DUE TO OTHER CONDITIONS WITH A KNOWN CAUSE

In addition to the feeding and eating disorders described above, the ICD-11 chapter should include a reference to disorders that are classified elsewhere but may primarily manifests with disordered eating. The most prominent example is Prader-Willi syndrome, which is caused by a deletion of the paternal copy of a region on chromosome 15, and is primarily classified in chapter XVII of ICD-10 (Congenital malformations, deformations and chromosomal abnormalities). This syndrome often presents with insatiable appetite, overeating, food hoarding and eating of non-food substances, but also includes intellectual disability.

CONCLUSIONS

We have reviewed published evidence relevant to the classification of feeding and eating disorders, with particular emphasis on clinical utility, response to treatment, prognosis, and developmental and cultural context. Based on this evidence, we make recommendations consistent with the general directions for the development of ICD-11. The principal recommendations are listed in Table 2.

Table 2 Recommendations for the classification of feeding and eating disorders in ICD-11

1. Merge feeding and eating disorders into a single grouping with diagnostic categories available for all age groups.
2. Broaden the category of anorexia nervosa through dropping the requirement for amenorrhoea; extending the weight criterion to include any significant underweight; and extending the cognitive criterion to include developmentally and culturally relevant cognitions and behavioural equivalents of fear of fatness, preoccupations with body weight and shape or food and eating.
3. Introduce a severity qualifier "with a dangerously low body weight" to distinguish the most severe cases that carry the riskiest prognosis within the broad category of anorexia nervosa.
4. Broaden the category of bulimia nervosa to include subjective binge eating.
5. Include the category of binge eating disorder, defined by either subjective or objective binge eating in the absence of regular compensatory behaviour.
6. Include a category of combined eating disorder to classify subjects who concurrently or sequentially fulfil the criteria for both anorexia nervosa and bulimia nervosa.
7. Introduce a category of avoidant/restrictive food intake disorder (ARFID) to classify restricted food intake that is not accompanied by body weight and shape related psychopathology.
8. Introduce a uniform minimal duration criterion of four weeks.

We hope that the proposed changes will substantially improve the clinical utility of the classification of feeding and eating disorders, will eliminate the need for using uninformative "not otherwise specified" diagnoses, and will stimulate research on continuity between child and adult presentations and on treatment efficacy in groups of patients that represent the vast majority of those presenting with eating related psychopathology in routine clinical settings.

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Positive mental health: is there a cross-cultural definition?

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Seven models for conceptualizing positive mental health are reviewed: mental health as above normal, epitomized by a DSM-IV's Global Assessment of Functioning (GAF) score of over 80; mental health as the presence of multiple human strengths rather than the absence of weaknesses; mental health conceptualized as maturity; mental health as the dominance of positive emotions; mental health as high socio-emotional intelligence; mental health as subjective well-being; mental health as resilience. Safeguards for the study of mental health are suggested, including the need to define mental health in terms that are culturally sensitive and inclusive, and the need to empirically and longitudinally validate criteria for mental health.

Key words: Positive mental health, maturity, resilience, coping mechanisms, subjective well-being, emotional intelligence, positive emotions

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The great epidemiological studies of the past half century have focused upon who was mentally ill and not who was well. Mental illness, after all, is a condition that can be defined reliably, and its limits are relatively clear. Until recently, only the Sterling County Studies by A. Leighton (1) came close to defining positive mental health operationally. In addition, it has been argued that achieving above average mental or physical health is not the province of medicine, but of education.

Early in the past century, internists began studying physiology at high altitude and devise measures of positive physical health for athletes, pilots, and finally astronauts. In 1929-30, at the University of California at Berkeley, the Institute of Human Development was founded by H. Jones, N. Bayley and J. McFarlane (2,3). Originally created to study healthy child development, the Institute was to provide a seminal influence on E. Erikson's model of healthy adult development. In the late 1930s, A. Bock, an internist trained in high altitude physiology and interested in positive physical health, began the Study of Adult Development at the Harvard University (4,5). This was designed as an interdisciplinary study of both mental and physical health.

Like physical fitness, positive mental health is too important to be ignored, but its definition is not easy. Several precautions are necessary. First, in defining mental health, cross-cultural differences must be kept in mind. My own efforts to define mental health may appear parochial to those from other countries. Thus, the commentaries on this paper will be particularly important.

The second precaution is to keep in mind that "average" is not healthy. Community surveys always mix in the healthy with the prevalent amount of psychopathology. In the case of red blood count, or thyroid function, the middle of the bell curve is healthy. In the case of eyesight, only the upper end of the bell curve is healthy; and in the case of cholesterol and bilirubin only the low end of the curve is healthy.

A third precaution is to make clear whether one is discussing trait or state. Longitudinal study is particularly important. A world-class soccer player temporarily sidelined with a sprained ankle (state) is probably healthier than a type 1 diabetic (trait) with a temporarily normal blood sugar.

Finally, mental health needs to be seen in context. Sickle cell trait is unhealthy in Paris, but not in central Africa where malaria is endemic. In the 1940s, paranoid personalities made very poor submariners but excellent airplane spotters. Punctuality and competitiveness are seen as healthy in some communities, but not in others.

Moreover, if mental health is "good", what is it good for? The self or the society? For "fitting in" or for creativity? In defining mental health, biology usually trumps anthropology. Cultural anthropology teaches us that almost every form of behavior is considered healthy in some cultures, but that does not mean that the tolerated behavior is mentally healthy. Until recently, Portugal did not recognize alcoholism as an illness, but that did not reduce the contribution of alcoholism to mortality in Lisbon. The best way to enrich our understanding of what constitutes mental health is to study a variety of healthy populations from different perspectives, in different cultures and for a long period of time.

This paper will contrast seven different empirical models of mental health. First, mental health can be conceptualized as above normal, as epitomized by a DSM-IV's Global Assessment of Functioning (GAF, 6) score of over 80. Second, it can be regarded as the presence of multiple human strengths rather than the absence of weaknesses. Third, it can be conceptualized as maturity. Fourth, it can be seen as the dominance of positive emotions. Fifth, it can be conceptualized as high socio-emotional intelligence. Sixth, it can be viewed as subjective well-being. Seventh, it can be conceptualized as resilience.

To avoid quibbling over which traits characterize mental health, it is helpful to adopt the analogy of a decathlon champion. What constitutes a "track star"? A decathlon star must possess muscle strength, speed, endurance, grace and competitive grit, although the combinations may vary. Amongst decathlon champions, the general definition will not differ from nation to nation, or century to century. The salience of a given facet of a decathlon champion, or of mental health, may vary from culture to culture, but all facets are important.

MENTAL HEALTH AS ABOVE NORMAL, EPITOMIZED BY A GAF SCORE OF OVER 80

After World War II, influential works on mental health began to be published (7-9). Although all studies concentrated on normal populations, they still put their emphasis on *not pathological* rather than on *above average* mental health. Besides, many post-war psychiatrists continued to agree with S. Freud who had dismissed mental health as "an ideal fiction".

Then, in 1958, M. Jahoda's report to the American Joint Commission on Mental Illness and Health (10) led to a psychiatric sea change regarding the existence of mental health. She suggested that mental health includes autonomy (being in touch with one's own identity and feelings); investment in life (self-actualization and orientation toward the future); efficient problem solving (accurate perception of reality, resistance to stress, environmental mastery); and ability to love, work and play. However, at the time she published her criteria, there was still no evidence to prove that her plausible definitions were more than mere platitudes.

Next, came R. Grinker's 1962 studies of "homoclites", the first empirical study of positive mental health (11). Grinker's homoclites were physical education majors selected for normality but studied only briefly. A second more longitudinal study was the elimination process, by which out of 130 healthy jet pilots, already selected for mental health, the seven original American astronauts were selected (12). These astronauts not only enjoyed exemplary work records, but also were competent at loving. Although venturesome test pilots, they all had had very few accidents during their years of flying. They could tolerate both close interdependent association and extreme isolation. Although each of the astronauts was very different, they all would have starred in a mental health "decathlon".

An even more influential study of mental health was the Menninger Psychotherapy Project led by the psychologist L. Luborsky. He devised the Health-Sickness Rating Scale, with a scale from 0 to 100 (13), based on behavior rather than pencil and paper tests. A score of 80 or above reflected positive mental health; a score of 95-100 reflected "an ideal state of complete integration, of resiliency in the face of stress, of happiness and social effectiveness".

Luborsky's scale was modified by two of the architects of DSM-III into what is now Axis V (14). In cross-cultural comparisons, investigators have confirmed the usefulness of Luborsky's measure as an international thermometer of mental health (15).

MENTAL HEALTH AS THE PRESENCE OF MULTIPLE HUMAN STRENGTHS

The fact that psychologists have approached mental health somewhat differently from psychiatry has led to this second model, which has provided the basis for the positive psychology movement (16). Psychologists, like physiologists, look at continua (traits) rather than categories, while in medicine you either have an illness or you do not. In psychology, interventions to improve adequate intelligence or social skills are common, while in medicine to meddle with adequate thyroid function, or a healthy hematocrit or a normal mood, is only to cause trouble. In the healthy rested individual, virtually all psychopharmacological interventions will, over time, make the brain function worse. Thus, the medical goal of using medication to remove pathology is different from the psychologists' goal of fostering positive mental health in an educative model.

As early as in 1925, the psychiatrist A. Meyer was already warning of the need to stop "moralizing" about utopian mental health. Mental health, he suggested, should be studied through "conscientious and impartial study" and "constructive experimentation" (17). Subsequently, the psychologist M. Seligman stated that positive psychology will use evidence-based experimentation to study positive mental health and incorporate recent empirical advances in cognitive psychology (18).

Since the late 19th century, many social scientists had mistrusted optimistic cognition, especially religious optimism, as a maladaptive "American" illusion interfering with accurate perception of reality. Nietzsche, Freud, Marx and Darwin all perceived optimism as evidence of an ingenuous cultural adolescence, not of mature mental health. However, cognitive therapists have then demonstrated that optimistic cognition can not only change behavior, but even alter brain function (19). If pessimism is the dominant cognition of the depressed, optimism appears the dominant cognition of the mentally healthy. In part, the importance of optimism to positive mental health depends upon an attributional cognitive style which asserts that the good things happening to me are my "fault", will last forever and are pervasive, while the bad things are limited, not my fault, and unlikely to happen again (20).

The psychologists C. Peterson and M. Seligman identified four components in positive mental health: talents, enablers, strengths, and outcomes. Talents are inborn, genetic and are not much affected by intervention (e.g., high IQ) (21). Enablers reflect benign social conditions, interventions, and environmental good luck (e.g., a strong family, a good school system, living in a democratic meritocracy). Strengths are character traits (such as kindness, forgiveness, curiosity, honesty) which reflect facets of mental health that are amenable to change. Outcomes reflect dependent variables (e.g., improved social relationships and subjective well-being) which can be used to provide evidence that efforts by clinicians to enhance strengths are effective.

Which strengths are most associated with mental health is open to debate. Wisdom, kindness and the capacity to love and be loved are strengths upon which few would argue. But should courage be included as a strength? And why were intelligence, perfect musical pitch and punctuality excluded? In addition, there is considerable debate within the mental health professions about whether positive mental health is a process that any insurance program should be expected to cover. Over time society will have to decide who should pay for positive mental health: the individual, the educational system, third party payers, religious organizations, or a combination of all four?

MENTAL HEALTH AS MATURITY

Unlike other organs of the body that have evolved to stay the same or deteriorate after puberty, the human brain continues to evolve in adulthood. A ten-year-old's lungs and kidneys are more likely to reflect optimal function than are those of a sixty-year-old, but that is not true of their central nervous systems. To some extent, then, adult mental health reflects a continuing process of maturational unfolding and progressive brain myelinization into the sixth decade (22,23). Prospective studies reveal that individuals are less depressed and show greater emotional modulation at age 70 than they did at age 30 (5,24).

In some respects E. Erikson in 1950 anticipated Jahoda and Grinker when he provided the first model of adult lifespan development (25). All previous models had depicted deterioration after 45-50. In contrast, Erikson viewed each of his eight stages of human development as a fresh "criterion of mental health". Subsequently, J. Loevinger provided a model of adult ego development (26) and L. Kohlberg built up a model of adult moral development (27). Implicit in all these models is the assumption that greater maturity reflects greater mental health. Arguably, the best definition of mental health that we have is W. Menninger's definition of maturity (28) as capacity for love, absence of stereotyped patterns of problem solving, realistic acceptance of the destiny imposed by one's time and place in the world, appropriate expectations and goals for oneself, and capacity for hope. In this model, maturity is not only the opposite of narcissism, but it is quite congruent with other models of mental health.

To support the maturational model of mental health, the assessment of the behavior and feeling states of persons studied over a lifetime becomes necessary. Although such longitudinal studies have come to fruition only recently, all illustrate the positive association of maturity with increasing mental health (5,24,29,30,31). In order to illustrate the association between mental health and brain maturity, individuals with brain trauma, major depression, arteriosclerosis, Alzheimer's disease, alcoholism, and schizophrenia must all be excluded.

Erikson conceptualized that maturity, through the evolution of adult development via life experience, produces a "widening social radius". In Erikson's model, adult maturity is achieved over time through the mastery of the four sequential tasks of "identity", "intimacy", "generativity", and "integrity". On the basis of empirical data from Harvard's Study of Adult Development, Vaillant has added two more tasks: "career consolidation" prior to generativity and "keeper of the meaning" prior to integrity (32). Surprisingly, the mastery of such tasks appears relatively independent of education, gender, social class and probably culture. The age at which any task is mastered differs enormously, but the maturity of life stage is highly correlated with mental health.

Identity is not just a product of egocentricity, of running away from home, or of marrying to get out of a dysfunctional family. There is a world of difference between the instrumental act of running away from home and the developmental task of knowing where one's family values end and one's own values begin. Such separation derives as much from the identification and internalization of important adolescent friends and non-family mentors as it does from simple biologic maturation. For example, our accents become relatively fixed by age 16 and reflect those of our adolescent peer group rather than the accents of our parents.

Next, young adults should develop intimacy, which permits them to become reciprocally, and not selfishly, involved with a partner. Living with just one other person in an interdependent, reciprocal, and committed fashion may seem neither desirable nor possible to a young adult. Once achieved, however, the capacity for intimacy may seem as effortless and desirable as riding a bicycle. Sometimes the relationship is with a person of the same gender; sometimes it is completely asexual; and sometimes, as in religious orders, the interdependence is with a community.

Career consolidation is a task that is usually mastered together with or that follows the mastery of intimacy. Mastery of this task permits adults to find a career as valuable as they once found play. There are four crucial developmental criteria that transform a "job" into a "career": contentment, compensation (i.e., useful to others, not just a hobby), competence and commitment. Failure to achieve career consolidation is almost pathognomonic of severe personality disorder.

Mastery of the fourth task, generativity, involves the demonstration of a clear capacity to care for and guide the next generation. Existing research reveals that sometime between age 35 and 55 our need for achievement declines and our need for community and affiliation increases. Depending on the opportunities that the society makes available, generativity can mean serving as a consultant, guide, mentor or coach to young adults in the larger society. Generativity is achieved by a little more than half the population and is a powerful indicator of positive mental health measured in other ways (31,32).

The penultimate life task is to become a "keeper of the meaning". This task, often part of grand-parenthood, involves passing on the traditions of the past to the future. The focus of a keeper of the meaning is on conservation and preservation of the collective products of mankind. Generativity and its virtue, care, requires taking care of one person rather than another. In contrast, keeper of the meaning and its virtues of wisdom and justice are less selective; for justice, unlike care, means not taking sides.

The last life task is integrity, the task of achieving some sense of peace and unity with respect to both one's own life and the whole world, and the acceptance of one's life cycle as something that had to be and that, by necessity, permitted of no substitutions. In our prospective study, healthy adult development followed the same pattern for inner-city men and gifted women as for university graduates (5,32). However, cross-cultural validation is badly needed.

MENTAL HEALTH AS POSITIVE EMOTIONS

In the 19th century, psychiatrists wrote of concepts like "moral insanity" and "good character" and mental health was deemed related to morality and religious observance. During the 20th century, the rise of cultural anthropology, psychoanalysis, behaviorism, molecular biology, and secularism in general led psychiatrists to doubt there was any relationship between morality (especially as exemplified by religion) and health. However, recent advances in the biological understanding of positive emotions have necessitated psychiatry taking them seriously (33,34). In the last ten years, positive emotions – previously relegated to popular songs, pastoral counseling, and religion – have been rendered scientifically plausible.

Fifty years ago, medical students were taught mainly about hypothalamic emotions like lust, hunger, fear and rage. Such emotions are also common in alligators and decorticate cats. Prosocial emotions like empathy, compassion and parental love were thought to be learned behaviors and, therefore, placed in the neocortex, and in the curricula of schools of education – not of medicine. Then, in the 1960s, P. MacLean (35), H. Harlow (36), and J. Bowlby (37) shifted attention to love as attachment rather than love as sexuality, thereby creating the basis for neuroscience to provide substance to the platitudes of Jahoda, Maslow, and even of St. Paul with his "theological virtues" of faith, compassion, hope and love.

The neurobiologist P. MacLean pointed out that the limbic structures govern our mammalian capacity, not only to remember (cognition) but also to play (joy), to cry out at separation (faith/trust) and to take care of our own (love). Except for rudimentary memory, reptiles express none of these qualities. Remove a mother hamster's cortex and she cannot do mazes but remains a competent mother. Damage her limbic system, however, and she can still do mazes but not parent her pups. The Darwinian advantages of positive emotions seem clear.

Not until the last twenty years, however, have functional magnetic resonance imaging (fMRI) studies explored the neurobiology of positive emotions. Various studies have located human pleasurable experiences (tasting chocolate, winning money, admiring pretty faces, enjoying music and orgasmic ecstasy) in limbic areas, especially in the orbitofrontal region, anterior cingulate and insula. These diverse structures are closely integrated and organized to help us to seek and to recognize all that falls under the rubric of mammalian love and human spirituality. In the last twenty years neuroscientists, like J. Allman (38) and G. Rizzolatti (39), have identified the limbic spindle cells and mirror cells that undergird prosocial human mentation.

Mirror neurons reside in the insula and anterior cingulate and appear to mediate empathy, the experience of "feeling" the emotions of another. The fMRI of prosocial mirror cells in the anterior cingulate cortex and insula is most active in individuals with the highest levels of social awareness and empathy, confirmed by pencil and paper tests (40).

Eight positive emotions (love, hope, joy, forgiveness, compassion, faith, awe and gratitude) comprise the important positive and "moral" emotions included in this model. Of great importance, the eight selected positive emotions all involve human connection, none is all about "me"; they are all future oriented; and they all appear to be a common denominator of the world's major faiths (41). Omitted from the list are five other present oriented positive emotions (excitement, interest, contentment, humor, and a sense of mastery), for we can feel these latter five emotions while alone on a desert island.

Of tremendous importance to individual survival, negative emotions are all about "me". We feel both the emotions of vengeance and forgiveness deeply, but the long-term mental health results of these two emotions are very different. Negative emotions are crucial for survival in time present. Experiments by neuroscientists like J. Panskepp (42) and psychologists like B. Fredrickson (33) and S. Lyubormirsky (43) document that, while negative emotions narrow attention and miss the forest for the trees, positive emotions, especially joy, make thought patterns more flexible, creative, integrative and efficient. Focused on time future, positive emotions increase our tolerance for strangers, expand our moral compass, and enhance our creativity (34).

The effect of positive emotions on the autonomic nervous system has much in common with the relaxation response and meditation. Negative emotions, via our sympathetic nervous system, induce metabolic and cardiac arousal. Positive emotions, via our parasympathetic nervous system, reduce basal metabolism, blood pressure, heart rate, respiratory rate and muscle tension. fMRI studies of Kundalini yoga demonstrate that meditation increases activity of the hippocampus and the right lateral amygdala, which in turn leads to parasympathetic stimulation, and the sensation of deep peacefulness (44).

MENTAL HEALTH AS SOCIO-EMOTIONAL INTELLIGENCE

High socio-emotional intelligence reflects above average mental health in the same way that a high IQ reflects above average intellectual aptitude. Such emotional intelligence lies at the heart of positive mental health. In the *Nicomachean Ethics*, Aristotle defined socio-emotional intelligence as follows: "Anyone can become angry – that is easy. But to be angry with the right person, to the right degree, at the right time, for the right purpose, and in the right way – that is not easy". Nevertheless, as recently as 50 years ago, a textbook on intelligence dismissed the concept of such Aristotelian social intelligence as "useless". Indeed, only in the 1970s did the modulation of “object relations” become more important to psychiatry than the modulation of “instinct”.

Social and emotional intelligence can be defined by the following criteria (45): accurate conscious perception and monitoring of one’s own emotions; modification of our emotions so that their expression is appropriate; accurate recognition of and response to emotions in others; skill in negotiating close relationships with others; capacity for focusing emotions (motivation) toward a desired goal.

Over the last 25 years, steps have been taken to apply our understanding of the relationship of socio-emotional intelligence to positive mental health. The first step is that both fMRI and neurophysiological experimentation have led to advances in our understanding of the integration of prefrontal cortex with the limbic system (46,47).

The second step forward has been our slow but steady progress in the conceptualizing and even the measuring of “emotional intelligence”. Over the last decade, measures of emotional intelligence have been evolving rapidly (48).

There are now many exercises in handling relationships that help couples, business executives and diplomats become more skilled at conflict resolution and negotiation. In the past decades, there has also been an increasing effort to teach schoolchildren core emotional and social competencies, sometimes called “emotional literacy” (45).

MENTAL HEALTH AS SUBJECTIVE WELL-BEING

Long before philosophers pondered criteria for mental health, they considered criteria for happiness and the “good life”. However, if through the centuries philosophers have sometimes regarded happiness as the highest good, psychologists and psychiatrists have tended to suspect it.

Happiness that comes from joy or unselfish love (agape), or from self-control and self-efficacy, or from play and “flow” (deep but effortless involvement), reflects health. Happiness that comes from spiritual discipline and concentration, or from mature humor, or from being relieved of narcissistic focus on shame, resentments, and the “poor-me’s” is a blessing. Authentic happiness, according to Seligman, depends upon achieving engagement, meaning, positive emotions and positive relationships (18).

On the other hand, subjective happiness can have maladaptive as well as adaptive facets. The search for happiness can appear selfish, narcissistic, superficial and banal. Hedonic pleasure can come easily and be soon gone. Illusory happiness is seen in the character structure associated with bipolar and dissociative disorders and with exaltation of “me” advocated by much popular American psychology. Examples of maladaptive “happiness” can refer to any unmodulated but gratifying primitive need like binge eating, drug abuse, tantrums, promiscuity and revenge. It is because of such ambiguity of meaning that, in this paper, the term “subjective well-being” will be substituted for happiness.

The rest of the world has always been skeptical of American concern with happiness. Only in the last decades have investigators like M. Seligman and E. Diener (49,50) pointed out that a primary function of subjective well-being is that it facilitates self-care, thus becoming an antidote to learned helplessness. Again, controlling for income, education, weight, smoking, drinking and disease, people high in subjective well-being live significantly longer (51).

Nevertheless, efforts to measure subjective well-being have been quite varied and lack a gold standard. Some investigators measure subjective well-being as simply global life satisfaction; other investigators assess more specific domains like work or marital satisfaction. However, the question “How do you feel about your life as a whole?”, answered on a simple 7 point scale ranging from “delighted” to “terrible”, works surprisingly well.

Because short-lived environmental variables can have a confounding effect, consensus is emerging that naturalistic experience-sampling methods are the most valid way to assess subjective well-being. With such sampling methods, research subjects are contacted by beeper at random times during the day for days or weeks and at each interval are asked to assess their subjective well-being (52). Better yet, in order to tease verbal self-report from actual subjective experience, physiological measures of stress (for example, measures of galvanic skin response, salivary cortisol, and filming facial expression by concealed cameras) have also proven useful.

MENTAL HEALTH AS RESILIENCE

There are three broad classes of coping mechanisms that humans use to overcome stressful situations. The first two are conscious: seeking social support and cognitive strategies that we intentionally employ to master stress. The third mode of coping is by involuntary mechanisms which distort our perception of internal and external reality in order to reduce subjective distress, anxiety and depression.

These involuntary mental mechanisms are labeled by the Defensive Function Scale of DSM-IV as defenses. They can abolish impulse (e.g., by reaction formation), or conscience (e.g., by acting out), or the need for other people (e.g., by schizoid fantasy) or reality (e.g., by psychotic denial). They can abolish our conscious recognition of the subject (e.g., by projection) or the awareness of a transgressor (e.g., by turning against the self) or abolish the idea (e.g., by repression), or the affect associated with an idea (e.g., isolation of affect/intellectualization).

The most pathological category of coping mechanisms includes denial and distortion of external reality. More common to everyday life are the immature and maladaptive defenses found in adolescents and in adults with personality disorders: projection, passive aggression, acting out and schizoid fantasy. The third class of defenses, often associated with anxiety disorders and with the psychopathology of everyday life, include repression, intellectualization, reaction formation, and displacement (i.e., directing affect at a more neutral object).

The fourth class of involuntary coping mechanisms characterize mental health (53). "Mature defenses" still distort and alter feelings, conscience, relationships and reality, but they achieve these alterations gracefully and flexibly. Doing as one would be done by (altruism), keeping a stiff upper lip (suppression), keeping future pain in awareness (anticipation), the ability not to take one's self too seriously (humor), and turning lemons into lemonade (sublimation) are the very stuff from which positive mental health is made. But alas, these behaviors cannot be achieved by a simple act of conscious will. Thus, the beholder regards such adaptive defenses as virtues, just as the beholder may regard the prejudice of projection and the tantrums of acting out as sins. Ultimately, like other facets of mental health, the reliable identification of healthy but involuntary coping mechanisms requires longitudinal study. Studies from both Berkeley's Institute of Human Development (54) and Harvard's Study of Adult Development (55) have illustrated the importance of the mature defenses to mental health.

Just as psychiatry needs to understand how, on Axis V, a score of 75 might become 90, just so psychiatry needs to understand how best to facilitate the transmutation of less mature into more mature coping styles. Progress is underway in using fMRI studies to demonstrate how these mechanisms are initiated by the brain (46,47) and how to use empirical methods to demonstrate change in the maturation of defenses during psychotherapy (56).

CONCLUSIONS

This paper has suggested seven conceptually distinct models of positive mental health. As outlined in Table 1, the Study of Adult Development at Harvard provides an empirical illustration of the interrelationship of five of these different models in a prospective study of non-delinquent inner-city men (55). Not only was each of five models (measured by independent raters) significantly correlated with the other four, but each model predicted objective global mental health assessed 15 years later. Significantly, none of the five models was well predicted by parental social class, or even by a warm childhood environment.

The concept of mental health raises the issue of therapeutic interventions to achieve it. What facets of mental health are fixed and which are susceptible to change? As noted above, chemicals can alleviate mental illness, but do not improve healthy brain function. We can enhance mental health only through cognitive, behavioral and psychodynamic education.

Finally, the study of positive mental health requires safeguards. First, mental health must be broadly defined in terms that are culturally sensitive and inclusive. Second, the criteria for mental health must be empirically and longitudinally validated. Finally, although mental health is one of humanity's important values, it should not be regarded as an ultimate good in itself. We must proceed in our efforts towards trying to achieve positive mental health while maintaining due respect for individual autonomy.

Table 1 Cross-correlation between different models of mental health at midlife and their predictive value and independence from parental social class and childhood environment: data from the Study of Adult Development at Harvard (55)

	A	B	C	D	E
Model A: GAF at age 50	-				
Model B: Maturity	.59	-			
Model C: Social intelligence	.38	.44	-		
Model D: Subjective well-being	.40	.30	.40	-	
Model E: Resilience	.76	.52	.39	.31	-
Objective global mental health at 65	.45	.33	.30	.56	.45
Parental social class	.06	.40	.18	.13	.07
Warm childhood environment	.05	.04	.07	.07	.03

GAF – Global Assessment of Functioning
All correlations > .25 are significant at $p < 0.001$

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Positive mental health: a research agenda

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Vaillant provides a thoughtful review of seven models for conceptualizing positive mental health. He proposes that the best way to understand mental health is to conduct longitudinal studies of multiple populations, in culturally diverse settings, using instruments that assess multiple conceptualizations.

Looking to future, I agree with Vaillant that there is a need for theoretical and empirical work to establish the most useful conceptualization of positive mental health. On the theoretical side, there is a need to clarify and integrate the current overlapping but distinct constructs into a broader overarching framework. On the empirical side, there is a need to develop and refine instruments for measuring positive mental health constructs at multiple levels, including self-report, behavioral ratings, psychophysiological responding, and neurobiological functioning. There is also a need to link research on positive mental health to the psychology of normal and abnormal functioning across the lifespan. In particular, it would be valuable to determine the links between positive mental health and intelligence, temperament, personality traits, self-regulation and attachment, through genetic, neurobiological, psychometric and developmental research.

Positive mental health must be distinguished from intelligence as psychometrically defined, and from other forms of intelligence in models such as Gardner's multiple intelligences (1). Clearly a high IQ and positive mental health are not synonymous. Nevertheless, mental health and intelligence (as defined by IQ tests) both involve effective problem-solving and adaptation to the environment. An important research question concerns the nature and extent of the overlap between psychometrically assessed intelligence and positive mental health across the lifespan.

Vaillant points out that positive mental health has been equated with social and emotional intelligence. There is also an argument that existential or spiritual intelligence, or indeed an advanced stage of moral development (2), may be central to positive mental health, given the well-established correlation between religious practices and well-being (3). It remains unclear what the relationships are between positive mental health and other forms of intelligence, such as musical, kinesthetic and naturalistic. Similar arguments may be made for the constructs of giftedness and creativity. It is plausible that certain individuals may be exceptionally gifted or creative in the way they address issues relevant to their own positive mental health.

Implicit in temperament and personality trait theories is a conception of positive mental health as involving a particular type of profile. For example, infants with easy temperaments may be viewed as having better mental health than those with difficult or behaviorally inhibited temperaments. With trait theories, such as the five factor theory of personality, individuals with high levels of emotional stability, extraversion, agreeableness, conscientiousness and openness to experience may be viewed as having better mental health than those with other profiles. Vaillant alludes to this type of approach in his section on mental health as the presence of multiple human strengths. However, I wish to underline the importance of linking research on positive mental health to extensive existing knowledge about temperament and personality traits (4).

A vast literature on self-regulation throws light on factors relevant to the capacity to persist in motivated action while tolerating distress (5). This capacity may be an aspect of positive mental health, and is probably related to adaptive defense mechanisms discussed in Vaillant's section on resilience. Research on self-regulation and positive mental health should be an important future priority.

Studies of attachment have shown that secure and insecure attachment styles may be identified across the lifespan, with secure attachment styles being associated with better psychological adjustment (6). Individuals with secure attachment styles, as a result of sensitive parenting in early life, develop internal working models of self and others that entail an expectation that others will reliably be available to meet attachment needs. This trusting disposition is arguably a key component of positive mental health, and an area requiring further investigation.

An integration of current models of positive mental health addressed in Vaillant's paper into an overarching framework, and research linking such an integrative model to intelligence, temperament, personality traits, self-regulation and attachment will ground our understanding of positive mental health within current knowledge about normal lifespan development, and provide a scientific basis for developing intervention programs to promote positive mental health.

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The self-determination theory perspective on positive mental health across cultures

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Vaillant provides an admirable historical and current overview of the concept of "positive mental health", outlining seven different conceptions of this fortuitous state. Interestingly, although the title of the article asks whether there is a cross-cultural definition of positive mental health, Vaillant does not spend much time addressing the cross-cultural issue. Are the seven models covered valid in other cultures? We don't really know. Vaillant does introduce a relevant metaphor in discussing champion decathloners, saying "All decathloners will share the positive characteristics of muscle strength, speed, endurance, grace and competitive grit, although the combinations may vary". This suggests that positive mental health might be characterized in the same basic ways in all cultures, even though particular cultures may differ in their amounts or mixtures of these characteristics (i.e., some cultures might have more "strength", others more "speed"). However, Vaillant does not speculate on how different cultural types might evidence more or less of the seven conceptions of positive mental health he reviews.

In order to shed more light on these issues, I will briefly discuss self-determination theory, a theory of motivational health which has received extensive empirical support over the last four decades, which I believe provides an eighth (and perhaps most fundamental) conception of mental health (1-3). It is possible that some readers of this journal are unfamiliar with this theory, which fits into the broad umbrella of "positive psychology". An advantage of the theory is that it concerns not just the positive, but also the struggle to obtain the positive in the context of potentially negative conditions and constraints. The theory also makes firm claims about the nature of positive motivation across cultures, which have been well confirmed empirically.

Self-determination theory assumes an inherently active individual, finding and following intrinsic motivations and in the process learning, growing, and thriving. Intrinsic motivations will emerge automatically, as long as environments support them (unfortunately, "controlling" environments can undermine them). The theory also proposes that all humans have three basic psychological needs, or experiential requirements, whose procurement supports intrinsic motivation, growth and health just as the procurement of basic physical requirements supports the growth and health of plants (4). The three needs are: autonomy (needing to be self-regulating; to own one's actions and to identify one's self with one's behavior); competence (needing to be effective; to be moving towards greater mastery and skill); and relatedness (needing to feel psychological connection with important others; to support, and be supported by, those others).

Note that these three needs correspond to Freud's "Love and Work", with the stipulation that work must be meaningful and autonomously chosen. The three needs also correspond to Jahoda's definition of mental health, discussed in Vaillant's paper: that mental health includes "autonomy (being in touch with one's own identity and feelings); investment in life (self-actualization and orientation toward the future); efficient problem solving (accurate perception of reality, resistance to stress, environmental mastery); and ability to love, work and play". Self-determination theory would propose that life-investment and future orientation emerge automatically when the other three needs are satisfied.

According to self-determination theory, these three needs evolved because humans who sought these psychosocial commodities, and who were psychologically reinforced when obtaining them, had a selective advantage compared to humans who did not. A large research literature now supports that these are three crucial components of health and well-being, which space limitations preclude me from covering. As just one example, a 2001 article tested ten candidate psychological needs as to their relative presence (or absence) within people's self-described "most satisfying events" (5). Autonomy, competence and relatedness emerged on top in this study; hedonic pleasure, financial success, popularity/status, safety/security, and even physical health and self-actualization, were not supported as basic needs by the study criteria.

Turning to the cross-cultural issue, the proposal that these are evolved basic needs within human nature suggests that they should be universally important across cultures. The literature clearly supports this: as just one example, Sheldon et al (6) found that these three needs predicted positive emotion and life satisfaction to an equal extent within twenty different cultures, including African, Asian, European, Latin, and Australasian cultures. This empirical approach takes, as evidence of a candidate need's status as a true need, that it predicts positive emotion and subjective well-being (two of the seven conceptions of positive mental health covered by Vaillant).

In the self-determination theory, positive emotion and subjective well-being are merely by-products of need satisfaction, rather than being the indicators of mental health themselves. In fact, self-determination theory might claim that all forms of mental health are ultimately supported by, and arise from, psychological need satisfaction.

How, then, do cultures differ in their mental health? According to self-determination theory, cultures differ in the amount to which they support the satisfaction of peoples' basic needs, and thus some cultures will be thriving (on average) more than others. For example, the autonomy need is typically less well-supported in Asian societies, as evidenced by lower autonomy need satisfaction scores in those cultures, which partially accounts for the reduced levels of positive emotion and subjective well-being seen in those cultures.

Returning to the decathlon metaphor, there are certain key experiential ingredients to mental health. Psychologically healthy people within all societies will evidence large quantities of these ingredients. However, societies will vary in the exact mix with which these ingredients are supplied and supported. For example, in their 2001 study, Sheldon et al (6) showed that South Koreans reported more relatedness than competence need satisfaction in their "most satisfying events", while the order was the opposite in the US. Nevertheless, competence and relatedness both predicted positive emotion to the same extent in the two cultures.

In sum, self-determination theory attempts to specify the "psychological nutriments" necessary for all forms of mental health, in all cultures. Individual and cultural differences in need satisfaction can explain individual and cultural differences in many kinds of positive mental health (7).

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The clinical role of psychological well-being

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Historically, mental health research has been dramatically weighted on the side of psychological dysfunction, and health has been equated with the absence of illness, rather than the presence of wellness. Ryff and Singer (1) suggested that the absence of well-being creates conditions of vulnerability to possible future adversities and that the route to enduring recovery lies not exclusively in alleviating the negative, but also in engendering the positive. Bringing the person out of negative functioning is one form of success, but facilitating progression toward the restoration of positive functioning is quite another.

George Vaillant rightly points out to the relative contributions and cultural sensitivity of different models of positive mental health. However, the concept of mental health is inextricably linked to that of psychological well-being. A comprehensive model developed by C. Ryff (2) provides an integration of different viewpoints. It encompasses six inter-related psychological dimensions: positive evaluation of one's self, a sense of continued growth and development, the belief that life is purposeful and meaningful, the possession of quality relations with others, the capacity to manage effectively one's life, and a sense of self-determination.

A number of clinical studies have yielded substantial support to this model. Assessment of psychological well-being using the Psychological Well-Being Scales (2) has disclosed that these dimensions are often impaired in patients with mood and anxiety disorders who remitted upon standard pharmacological or psychotherapeutic treatment (3). Lack of psychological well-being has been found to be a risk factor for depression (4). A specific psychotherapeutic strategy for increasing psychological well-being and resilience, the well-being therapy (WBT), based on Ryff's conceptual model (2), has been developed and tested in a number of randomized controlled trials (3). The application of WBT, in addition to standard cognitive behavior therapy (CBT), to patients with recurrent depression who responded to drug treatment was found to yield a significantly lower relapse rate at a 6-year follow-up compared to clinical management (CM) (5). Further, the sequential combination of CBT and WBT has been found to induce a higher degree of remission, as shown by both distress and well-being scales, compared to CBT alone in generalized anxiety disorder, with advantages persisting at a 2-year follow-up (6).

A recent randomized controlled trial in cyclothymia (7) has yielded additional insights. Sixty-two patients with DSM-IV cyclothymic disorder were randomly assigned to CBT/WBT or CM. At post-treatment, significant differences were found on all outcome measures, with greater improvements after treatment in the CBT/WBT group compared to the CM group. Therapeutic gains were maintained at 1- and 2-year follow-ups. These results imply that a sequential combination of CBT and WBT, addressing both polarities of mood swings and comorbid anxiety, yields significant and persistent benefits in cyclothymic disorder. This investigation suggests that it is the balance among the various psychological dimensions that matters the most.

Ryff and Singer (1) emphasize Aristotle's admonishment to seek "what is intermediate", avoiding excess and extremes. The pursuit of well-being may in fact be so solipsistic and individualistic to leave no room for human connection and the social good; or it can be so focused on responsibilities and duties outside the self that personal talents and capacities are neither recognized nor developed. Ryff and Singer (1) thus value the concept of balance, both as a theoretical guide and as an empirical reality that scholars of well-being need to appreciate.

The application of Ryff's model (2), both in terms of assessment and treatment, thus suggests that optimally balanced well-being differs from person to person: there is no single right way to be well (people have differing combinations of strengths and vulnerabilities and one has to work with what is available). The cross-cultural implications of the model are thus considerable and should integrate Vaillant's framework. Further, Ryff (2) emphasizes that personality assets should be combined with contextual variables (work, family life, social ties and socioeconomic conditions). The central message is that personality, well-being and distress come together in different ways for different people.

G. Engel (8) defined etiological factors as "factors which either place a burden on or limit the capacity of systems concerned with growth, development or adaptation". Positive mental health should aim to address these etiological factors. Assessment of well-being and pursuit of well-being enhancing strategies such as WBT should be incorporated in clinical evaluation and therapeutic plans (9).

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Healthy personality development and well-being

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George Vaillant describes seven concepts of positive mental health: effective functioning, strengths of character, maturity, positive emotional balance, socio-emotional intelligence, life satisfaction (true happiness), and resilience. His descriptions reflect his outstanding contributions to the epidemiological investigation of mental health as well as his affiliations with psychoanalysis and positive psychology. He makes the valuable observation that these seven concepts of well-being overlap extensively.

The correlations observed by Vaillant among empirical measures of these constructs suggest that feedback interactions among multiple distinct processes influence the development of well-being as a complex adaptive system (1,2). The development of well-being must involve such a complex adaptive system because the same personality traits can lead to different health outcomes (i.e., multi-finality), and different sets of personality traits can lead to the same health outcome (i.e., equifinality) (2). As a result, linear stage models of development like those of Erikson, Piaget, and Kohlberg are inadequate.

The feedback dynamics of well-being has hopeful implications for mental health care because it means that there are multiple paths to well-being that can be accommodated by the unique strengths and weaknesses of each person. At the same time, such complex dynamics presents a severe challenge for the validation of distinct measures of the components of well-being. Measures of all seven of the concepts of well-being described by Vaillant are moderately correlated with Temperament and Character Inventory (TCI) measures of maturity (i.e., self-directedness and cooperativeness) and low harm avoidance (3). Regrettably, the residual variability is not well understood in terms of content, structure, or function of other personality dimensions like self-transcendence and persistence, although progress is being made (4-6).

Nevertheless, the dynamic nature of the processes that promote well-being implies that there is a crucial role for self-transcendence in the flourishing of health with maturity, integrity, wisdom, resilience, and creativity. Erikson's and Vaillant's spiral of maturity can be systematically related to the development of the three character traits of self-directedness, cooperativeness, and self-transcendence (1). Like Vaillant, the DSM-5 is proposing a general definition of healthy personality in terms related to self-directedness and cooperativeness. However, the DSM-5 neglects self-transcendence, even though all three character traits are important in predicting physical, mental, and social components of health and happiness (3).

A self-transcendent outlook of unity is actually fundamental to healthy personality development, even though it may be devalued in materialistic cultures. For example, the humanistic psychologist G. Allport stated: "The basic existentialist urge to grow, pursue meaning, seek unity is also a given. It is a major fact – even more prominent in man's nature than his propensity to yield to surrounding pressures" (7). Recognizing the need for a dynamic balance between autonomy and coherence, Allport described the characteristics of psychological maturity as an adaptive set of seven functions: a) self-extension (authentic and enduring involvement in significant life activities, such as work, family life, or community service); b) dependable ways of relating warmly to others, such as tolerance, empathy, trust, and genuineness; c) self-acceptance or emotional security (the ability to regulate and live with one's emotional states); d) realistic perception and appraisal (seeing the world as it is in contrast to being defensive or distorting reality to conform to one's wishes); e) problem-centeredness (resourceful problem solving); f) self-objectification (self-awareness allowing a person to know oneself with insight and humor); and g) a unifying philosophy of life, allowing comprehension and integration of one's goals and values (7). According to Allport, a healthy person is constantly striving toward unification of personality by integration of all aspects of his/her life.

Inspired by the descriptions of psychological maturity by Allport and other humanists, C. Ryff developed reliable measures for components of mental health, which she calls psychological well-being (8). Ryff's measures have been helpful in differentiating the psychobiological correlates of well-being and ill-being (9). Her empirical findings show that the absence of symptoms of mental disorders does not assure the presence of positive emotions, life satisfaction or other indicators of well-being. Unfortunately, Ryff's proposal does not provide an adequate measure of self-transcendence or a unifying philosophy of life. Her measures are moderately explained by high self-directedness, high cooperativeness, and low harm avoidance. Ryff's measure of personal growth is positively correlated with self-transcendence but only weakly (10). An adequate model of well-being will require a better understanding of the role of self-transcendence (5). In contrast to defensiveness and effortful control, an outlook of unity is expressed in activities such as fluidity in athletic performance, improvisation in musical composition, trustful perception of social support, and generosity in charitable donations, which each activate the most recently evolved parts of the brain, particularly prefrontal poles (11). Activation of the anterior prefrontal cortex produces feelings of satisfaction even when anticipating adversity or when making meaningful personal sacrifices.

In summary, Vaillant's concepts can help people to reflect on the content and functions of the components of well-being. Much more work is needed to develop empirical measures that are able to reliably distinguish the different processes that promote healthy personality development and well-being. We need to better understand the crucial role of self-transcendence along with other dimensions of personality in the development of health and happiness (3,5). The great deficiency of emerging classifications of mental disorders is that they embody little or no understanding of the science of well-being. I applaud George Vaillant and the leadership of *World Psychiatry* for their roles in stimulating this valuable discussion of well-being.

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What is health and what is positive? The ICF solution

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When talking about positive health, a clarification of concepts and definitions is essential. Vaillant gives a spectrum of answers, but raises at the same time even more questions which need a detailed discussion.

A first question in need of clarification is what is meant with "health". Additional to what is discussed by Vaillant, a definition is needed of what is meant with "positive", and whether "positive" and "health" are synonyms. Vaillant points to exceptional persons like astronauts or decathlon champions. This suggests that positive health is something different from health as such, i.e. health of ordinary persons. If this is meant, the question is, who is interested in extremes of health, and can these be called health at all? Is the disfigured heart of an athlete healthy or is it sick, as it may kill the person in spite of the fact that it temporarily helps to achieve high scores in sport? And is persistent happiness and well-being not called hyperthymia? So, what is the criterion to say that something is "healthy"? We need norms and Vaillant is correct in saying that they can neither be taken from distributions of scores nor from achievement.

A second question in need of clarification is the relation between health and illness. Vaillant says that "mental illness is a condition that can be defined reliably" and he then contrasts mental illness with "positive mental health". Contrary to the traditional view that "health" and "illness" are two ends of a one-dimensional continuum, Vaillant proposes a two-dimensional concept, e.g., when talking about a world class soccer player with a broken ankle who is ill and healthy at the same time. The assumption that health and illness are two independent dimensions allows to study the interaction between them, and not only to measure but also to address both illness and health specifically. Especially in the treatment of chronic illness, like myocardial infarction, cancer, or anxiety, the problem is in many cases not so much the illness but the deterioration of health because of the illness. We have called this the "cuckoo's-egg-syndrome". In order to have a beautiful garden, it is not enough to tear out weeds (addressing illness), but you also have to plant flowers (improving health). There is a long list of well-evaluated interventions for the improvement of health, which we have summarized under the term "salutotherapy" (1).

A third question in need of clarification is what dimensions are included under the term "health". Vaillant points to seven areas of psychological research, but there are further concepts of interest like personality, cognitive intelligence (not only emotional intelligence), activities of daily living, workability, coping, social competence, self efficacy, adaptation, purpose of life psychology, wisdom psychology, quality of life, sense of coherence (2-5). These are also important dimensions in describing the psychology of health and each is supported by a large body of research. One more question is why only psychological constructs are discussed. Are there no biological or somatic dimensions of mental health? (6).

In summary, the conclusion is that the problems with health are the same as with illness. There is no general definition of illness nor of health which catches all aspects. There are many illnesses, with quite different definitions and criteria, and similarly we should talk about many different forms of health. The structure of Vaillant's paper goes in this direction, as it discusses not health but resilience, well-being, etc., which are all important, needed, and helpful dimensions, but which are not "health as such".

Is there a way to answer the open questions and come to a "differential diagnosis" of health? The International Classification of Functioning, Disability, and Health (ICF), produced by the World Health Organization (7), can serve as a frame of reference for the classification of health, as the ICD in the classification of illness. The ICF describes "functional health" by discriminating between function, capacity, environment, person, and participation. Capacity is qualified in reference to context factors, which solves the problem of norms (8). This is analogous to intelligence tests, where the intelligence quotient is calculated also on the basis of, for example, age and education. The ICF covers somatic and psychological functions, and includes a list of activities and context factors as well as recommendations for their assessment. The ICF provides a frame in which one can include all the different concepts discussed by Vaillant, showing that we do not have to look for "the" definition of health, since there are many "healths", which become of interest to therapists whenever they are needed, endangered, or impaired in a given individual and at a given time (8-10).

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Subjective positive well-being

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Among the seven models of positive mental health so clearly described by George Vaillant in this issue of *World Psychiatry*, the model of subjective well-being, reflecting the positive tone of the World Health Organization (WHO) definition of health, has cross-cultural validity. Actually, Vaillant himself refers to the single-item question "How do you feel about your life as a whole?" as a simple candidate for such a cross-culturally valid measure.

In the WHO Quality of Life Scale (WHOQOL), another "global" question is: "How would you rate your quality of life?". This item is measured on a "bipolar" scale with such answer categories as "poor", "neither poor nor good", and "good" (1). The WHOQOL has been found useful in many cross-cultural studies (1).

In the late 1970s, the Index Medicus accepted self-reported quality of life scales as outcomes in clinical studies. The most frequently used quality of life scales in the 1980s and 1990s were the Psychological General Well-Being Scale (2) and the Short-Form 36 item health survey (SF-36) (3). Psychometric analyses of these scales identified the factors of physical versus mental health. The WHO (Five) Well-being Index (WHO-5) was then developed for the purpose of measuring positive mental health (4). The WHO-5 includes the following five items: a) feeling cheerful and in good spirits, b) feeling calm and relaxed, c) feeling active and vigorous, d) feeling fresh and rested when waking up, and e) feeling interested in day-to-day activities. The Likert answer categories, which take the past two weeks into account, range from "all of the time" to "at no time". As in the SF-36, the total score on the WHO-5 ranges from 0 to 100, where high scores signify better well-being. Decreased positive well-being as measured on WHO-5 is a sensitive indicator of mental health problems (5), and in clinical trials the goal of treatment is to move the scores up to the mean scores in the general population, i.e. approximately 70 (6).

Subjective psychological well-being or health-related quality of life is often considered to be a rather individualistic, personal or idiographic issue, implying that a cross-cultural definition is very difficult to obtain. As discussed elsewhere (7), subjective well-being might in the first place be considered as a self-reflective, private language in which the person is communicating with herself or himself from the moment when she or he wakes up, perceiving and planning the day, having emotional appetite for starting her or his day. However, studies all over the world have indicated that the WHO-5 items seem to cover basic life perceptions of well-being, allowing this private language to be translated into a simple language of communication (6,7).

In Table 1 of his paper, Vaillant demonstrates that subjective well-being indeed predicted objective mental health with the highest coefficient of correlation when compared to the other models of positive health over a time span of 15 years. The predictive validity of the WHO-5 in a 6-year survival analysis of cardiology patients was also found to be high (8).

Vaillant states that "chemicals can alleviate mental illness but do not improve healthy brain function". The pharmacopsychometric triangle has recently been introduced in trials of antidepressants (6,7,9). The outcomes of pharmacotherapeutic chemicals are hereby triangularized. Antidepressants are not intended to directly treat decreased quality of life, but to treat depressive illness (A) with as few side effects as possible (B). When the balance between (A) and (B) is evaluated by the patients themselves on subjective well-being scales such as the WHO-5 (C), where the goal is to move the scores up into the area of the general population mean scores (6), antidepressants do not, as concluded by Vaillant, enhance mental health beyond this level. Forty years ago, the great American psychopharmacologist L. Hollister (6) taught me that, when treating a 35-year old man for a major depressive episode with an antidepressant, we can move his depression scores down to remission over 6 weeks and then, hopefully, in the relapse prevention continuation therapy, bring him out of the depressive episode. On the other hand, we are not able to then turn the patient into a great violinist if he never had held a violin in his hands prior to treatment.

Within the field of clinical medicine we as psychiatrists do our best to restore the brain functions of our patients suffering from mental disorders, using subjective well-being as an essential goal of treatment within the pharmacopsychometric triangle.

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Problems in the definitions of positive mental health

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I would like to congratulate George Vaillant for his balanced presentation and thoughtful discussion of seven main models of positive mental health. Although the paper has many merits, it also evokes several questions. Due to restricted space, I will just focus on a couple of them.

First, I do not agree with Vaillant's statement that the limits of mental illness are relatively clear. I think that one of the main problems in modern psychiatry is the unclearness of diagnostic boundaries. As just one example, we recently showed that changing the threshold for only one question in a diagnostic interview resulted in major changes in the prevalence rates of major depressive episode (1). The use of the threshold "depressed mood all day" yielded a prevalence of 4.7%, while using the thresholds of "depressed mood most time of the day" or "at least half of the day" yielded prevalence rates of 9.2% and 11.9%, respectively. This same problem of unclear boundaries applies of course also to the question of positive mental health.

The difficulty of defining positive mental health is exemplified by the obvious shortcomings of many of the definitions. In these definitions, functioning above normal, the presence of human strengths, positive emotions and subjective well-being are listed as criteria. However, if the basic idea is that positive mental health is more than just the absence of mental illness, it is problematic to say that these features are the core of positive mental health, because the lack of them has a high correlation with mental illness.

From a Nordic perspective, especially the concept of "spirituality" as one component of positive mental health appears odd. The Nordic countries are probably more secular than most other countries in the world. For a Finnish scholar like me, using words such as "faith" and "spirituality" in the context of positive mental health sounds very strange.

The definition of spirituality has changed over the years (2). If "spirituality" here means religiosity, I think it is wrong to link positive mental health to an ideology of any kind. This could imply that people without religious tendencies cannot be as mentally healthy as "spiritual" people. As far as I know, there are no studies showing that agnostic or atheist people have poorer mental health than "spiritual" people.

On the other hand, if a broader definition of spirituality is taken, there are indeed some studies showing that spirituality is associated with mental health. But here the problem is that modern measures of "spirituality" actually measure such things as sense of purpose and meaning in life, social connectedness, optimism, harmony, peacefulness and general well-being (2,3). The tautology is obvious, because patients suffering from psychiatric illnesses usually do not at the time of illness exhibit these features. Thus, it is not surprising that these measures are positively related to mental health.

The definitions of maturity and socio-emotional intelligence are to my mind less problematic, but their shortcoming is that they are restricted to the psychological sphere. If we assume that such characteristics as capacity for love, morality, generativity, conflict resolution and negotiation are some of the core features of positive mental health, we should perhaps include in the definition the evidence that these abilities are implemented in real life. Then we would have to define positive mental health in terms, for instance, of actions taken towards a society that is more equal and less competitive and exploitative than most of current societies are.

My last point is that physical health is ultimately defined in biological terms. If the roots of human mind are in the brain, should not the ultimate definition of positive mental health rely on optimal brain functioning? There are some reflections on this in Vaillant's article when he describes the models of positive emotions and socio-emotional intelligence. Although I am sure that neurobiology will in the future contribute importantly to this discussion, I do not, however, believe that one day we will have an unambiguous neurobiological description of optimal brain function as a basis of positive mental health. In my mind, the first reason for this is that the "mental" exhibits emergent properties in relation to brain functions (see 4). The other reason is that the definitions are and should be to some degree context dependent. Positive mental health is not only a property of a certain individual, but is heavily influenced by social phenomena (5).

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Positive mental health: a note of caution

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The concept of positive mental health is doubtless "too important to ignore". At the same time, as Vaillant states in his thought-provoking paper, "the study of positive mental health requires safeguards". Here I wish to emphasize two points: that positive mental health remains a fuzzy and contested construct, and that there are currently few data on clinician driven positive mental health interventions.

While Vaillant performs a service by outlining different models for conceptualizing positive mental health, the multiplicity of models underscores that this is a contested construct. While there is some agreement about the boundaries of typical physical disorders, there is likely less agreement about the concept of physical fitness. After all, definitions of physical fitness depend greatly on the particular individual at hand, and on the particular activity for which fitness is being determined (1). Similarly, while there is some agreement about the boundaries of typical mental disorders (2), there is likely less agreement about those for positive mental health.

Given the potential importance of positive mental health, how do we develop consensus? Vaillant argues for terms that are culturally sensitive and inclusive.

While such a goal seems laudable, cultures can be entirely wrong about scientific constructs. Another approach might be to rely on evolutionary theory, as have some approaches to disorder (3). But, given the apparent plasticity of human nature, evolutionary theory may emphasize precisely such plasticity, rather than specific fixed universal features of mental health. Relatedly, contra Vaillant, evolutionary theory emphasizes that negative emotions may be useful, while positive emotions may be maladaptive (4).

In the case of disorder, for typical conditions (e.g., acute infection), there may be substantial universal agreement that the condition is harmful, that individuals are not responsible for the condition, and that medical intervention is deserved. However, for atypical conditions (e.g., excessive alcohol use), there may be substantial disagreement from time to time and place to place about whether the condition is harmful, whether individuals bear responsibility, and whether medical intervention is deserved (5). A reasonable decision can, however, be made on the basis of arguments for and against categorizing a particular atypical condition as a medical disorder.

Similarly, for positive mental health, there is likely to be substantial agreement about some typical components (e.g., resilience to stress) (6), and controversy about more atypical components (e.g., career consolidation). In many regions, high levels of unemployment and other social factors may prevent transformation of "jobs" into "careers". As in the case of categorizing particular conditions as mental disorders, however, a reasonable decision can be made on the basis of a rigorous assessment of the relevant facts and values (5).

Concerning positive mental health interventions, we can easily agree that cosmetic surgeons who help treat disfigured children are doctors. We can easily agree that a surgeon who is willing to transform a particular individual to look more like his favourite movie star is not a doctor, but a schmoctor (7). And we can reasonably debate whether cosmetic surgery to enhance appearance in particular ways for particular individuals is doctoring or schmoctoring.

Similarly, in the case of positive mental health, mental health clinicians may reasonably be interested in key aspects (e.g., resilience after trauma). It may be harder to obtain consensus that mental health clinicians who help individuals, say, "tune into the energies of the universe" are not doctors, but schmoctors. Again, however, we can reasonably debate about whether particular mental health interventions aimed at enhancing the mind are doctoring or schmoctoring.

Such debate is in part about the validity of the relevant goals (e.g., surgery to look like a favourite movie star does not seem to be a health issue), and it is in part about the cost-effectiveness (e.g., society may be able to bear the costs of cosmetic surgery for major disfigurement, but not for enhancement procedures). Similarly, society may decide to focus on treating patients with severe mental disorders, rather than to fund clinical interventions to enhance resilience.

It is noteworthy that many interventions can potentially help humans to flourish mentally, including education, participation in the arts, etc. Indeed, there are growing literatures in the areas of conceptual work on the meaning of life (8), and empirical research on well-being and happiness (9-11). That said, it is a moot point as to whether interventions to improve positive mental health should necessarily fall within the purview of mental health clinicians.

Furthermore, empirical studies of costs and benefits of interventions are needed to inform decision-making. Vaillant argues that, in healthy individuals, psychopharmacological interventions are negative. Remarkably, large numbers of the population are using psychotropic agents for enhancement purposes (12). There is, however, no a priori reason to conclude that such agents are always harmful; indeed, given genetic variability, individual responses may be quite variable (13).

Vaillant's view is that we can enhance mental health through cognitive, behavioural and psychodynamic means. However, there is a dearth of empirical data on the efficacy and cost-effectiveness of positive mental health interventions. Arguably, appropriate nutrition and exercise are likely amongst the most efficacious and cost-effective positive mental health interventions (14). More certain is the need for additional research in this area.

In conclusion, debate in the arena of public health often refers not to psychiatric disorders, but rather to mental health. This is exemplified perhaps by the World Health Organization's slogan "no health without mental health". Such rhetoric may offer a number of advantages. Furthermore, the science of positive mental health is an important area of investigation.

At the same time, caution is warranted. While there is universal agreement about the need to treat some typical and burdensome physical and mental disorders, there is less agreement about what constitutes positive mental health, and about which clinical interventions may be efficacious and cost-effective. Empirical data may help shed more light on these key questions.

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Quality of hallucinatory experiences: differences between a clinical and a non-clinical sample

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In this study, we asked people from two samples (a clinical one, consisting of patients with schizophrenia, and a non-clinical one, including university students) to complete the Revised Hallucination Scale (RHS) as a self-questionnaire. When the participants responded positively to an item, they were encouraged to provide further detailed descriptions (i.e., examples of their own experiences) concerning that item. We found that the kinds of descriptions provided by the two groups were very different. We suggest that it is not advisable to explore the presence of hallucinations in non-clinical samples using research protocols based exclusively on yes-or-no answers to questionnaires like the RHS. Hallucinatory or hallucinatory-like experiences cannot be reliably and validly assessed without a precise characterization of the phenomenal quality of the experience.

Key words: Continuum model, hallucinations, psychotic–like experiences, phenomenology, qualitative analysis, schizophrenia

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The notion that apparently healthy people can experience psychotic symptoms such as delusions and hallucinations "is now becoming the accepted dogma" (1). Part of this "dogma" is the assumption that the experiences reported by non-clinical samples are overlapping, or at least show some similarity, with those reported by clinical samples (i.e., that "psychotic-like experiences" exist on a continuum between general and clinical populations) (2).

In 1981, Launay and Slade (3) published the Launay-Slade Hallucination Scale (LSHS), a 12-item self-report questionnaire aimed to assess the prevalence of perceptual pathological experiences and sub-clinical forms related to hallucinations. This scale started a tradition of almost 30 years of studies of hallucinations in non-clinical samples. Since then, several modified versions of LSHS have been developed (4-6). In order to assess in detail visual hallucinations, Morrison et al (5) modified the LSHS excluding three original items and adding four new ones. This version of LSHS was called Revised Hallucination Scale (RHS) (Table 1) and has been used in clinical and non-clinical samples (7,8).

Although the LSHS and similar scales were constructed to measure predisposition to hallucinatory experiences (3) (i.e., the vulnerability phenotype and not the illness phenotype), subsequent studies have used the results obtained through these scales in non-clinical populations as one of the main arguments suggesting that hallucinations – i.e., a significant component of the supposed illness phenotype of psychosis – are a relatively common phenomenon in the general population. A very influential example of this trend is encapsulated in the following quotation (9): "A number of studies have assessed hallucinatory experiences in samples of healthy college students using questionnaire measures. These studies have yielded consistent findings, showing that a considerable proportion of individuals experience hallucinations at some time in their lives".

Having identified the presence of hallucinations in non-clinical samples, studies have started to explore the relationships between these experiences and other psychological or psychopathological variables or domains such as anxiety, depression and stress (10), emotions (11), personality (12), and metacognition (13). Based on the analysis of these results, important theoretical assumptions have been made: a) that the same symptoms seen in patients with psychotic disorders can be found and measured in non-clinical populations (2); b) that the clinical definition of psychosis may encompass only a minority of the whole (not necessarily clinical) phenotypic continuum (9); c) that the population showing a non-clinical psychosis phenotype may represent an appropriate group for studying clinical psychosis (9).

Despite the wide empirical evidence that a substantial proportion of the healthy general population has psychosis-like experiences, virtually no studies have addressed whether the experiences reported by non-clinical samples are indeed

Table 1 Items of the Revised Hallucinations Scale (RHS)

1. My thoughts seem as real as actual events in my life
2. No matter how much I try to concentrate on my work, unrelated thoughts always creep into my mind
3. I have had the experience of hearing a person's voice and then found that there was no one there
4. The sounds I hear in my daydreams are usually clear and distinct
5. The people in my daydreams seem so true to life that I think they are real
6. In my daydreams I can hear the sound of a tune almost as clearly as if I were actually listening to it
7. I hear a voice speaking my thoughts aloud
8. I have been troubled by hearing voices in my head
9. I have seen a person's face in front of me when no one was there
10. When I look at things they appear strange to me
11. I see shadows and shapes when there is nothing there
12. When I look at things, they look unreal to me
13. When I look at myself in the mirror I look different

similar to the experiences of clinical samples. In other terms, if both populations respond positively to an item of the RHS, it is unclear whether they are referring to the same (or similar) experience.

In the present study, we asked people who responded positively to items of the RHS to further comment on and describe their personal experiences related to those items, in order to characterize the *quality* of those experiences. The purpose was to assess the way individuals from non-clinical and clinical populations understand each RHS item and then compare the two populations looking for similarities and differences.

METHODS

We randomly selected a clinical and a non-clinical sample. The clinical sample consisted of 23 patients diagnosed with schizophrenia according to DSM-IV-TR, recruited from day-care hospitals of the National Health Care Service in the province of Almeria (Spain). Their age ranged from 21 to 63 years; 73% were men and 27% women. All patients were born in Spain and unemployed, none was immigrant. All of them were receiving antipsychotic and/or antidepressant medication at the time of the assessment. The non-clinical sample included 60 university students from Southern Spain (Andalusia). Their age ranged from 17 to 29 years; 48% were men and 52% women.

All participants completed the RHS as a self-questionnaire. When they responded positively to an RHS item, they were encouraged to provide further detailed descriptions, i.e., comments or examples of their own experiences. The interviewers transcribed these responses verbatim.

Blinded to the sample to which each subject belonged, each researcher read the descriptions independently (line-by-line examination of the data), seeking concepts and assigning them codes. Next, the descriptions were grouped according to phenomenal analogies (e.g., dreams and dream-like experiences), or similarities of the context in which the experiences had occurred (e.g., hypnagogic/hypnopompic states). The final categories were established by comparing, and discussing when necessary, each researcher's coding. These categories were named using a comprehensive instrument for psychopathological assessment (AMPD System) (14). Those descriptions which were not covered by an AMDP item were classified according to further psychopathological categories from a standard handbook of descriptive psychopathology (15).

The study protocol was approved by the Ethics Committees of the Hospital of Almeria and the Hospital of Poniente.

RESULTS

Prototypes of the descriptions given by the interviewees are presented in Tables 2 and 3. The types of descriptions provided by the two groups were remarkably different. For example, on items 3, 4, 8, 9, 12 (see Table 1), the non-clinical sample described hypnagogic and hypnopompic hallucinations (e.g., "I'm half asleep, not quite asleep nor fully awake, and I hear people calling me by name"), dreams and dream-like experiences (e.g., "In my daydreaming I could see my father's face"), and pseudo-hallucinations (e.g., "When I'm at home studying, I hear my mother's voice calling me. She lives with me and calls me often, and this might make me think that I hear her calling me when she really is not"). On the contrary, on the same items, the clinical sample described auditory verbal hallucinations (e.g., "I hear a voice that asks

Table 2 Prototypical descriptions of experiences provided by the clinical sample

RHS items	Categories	Descriptions
1	Dereistic thinking	I believe that my brother was dead when he was really alive
1, 3, 8, 10, 11	Centrality experiences	Watching TV and thinking they were talking to me
3, 7, 8	Auditory verbal hallucinations	I hear a voice that asks me to do something or tells me something about someone
3, 4, 5, 9	Visual hallucinations	I see my mother or brother [*as an apparition*], and they show me their pain
6	Vivid imaginations	I often only have to imagine the song and I hear it in my head with all of its instruments and parts
2, 12	Obsessions-compulsions	Sometimes I just attack people when I'm really a good person who hasn't done anything bad to anyone
10, 13	Derealization-depersonalization	When looking at people, they sometimes seem strange, like they're not real, and the things in the house too
4, 9, 11, 12	Tangential responses	Listening to the song of Ana Belen, "...watching the time pass, the Gate of Alcalá", I'm from Madrid and it makes me cry because it brings back good memories of my days as a student
2, 3, 5, 7, 13	Residual category	Having tried to talk to the thought, thinking it was saying something. In that moment I thought I had power and that others were able to hear me [Thought transmission] I imagined that another woman was me (*that there was another woman inside of her*) [Passivity experience]

RHS - Revised Hallucination Scale

Table 3 Prototypical descriptions of experiences provided by the non-clinical sample

RHS items	Categories	Descriptions
1, 4, 5, 8, 9	Dreams and dream-like experiences	In my daydreaming I could see my father's face
3, 4, 8, 9	Hypnagogic and hypnopompic hallucinations	I'm half asleep, not quite asleep nor fully awake, and I hear people calling me by name
3, 4, 7, 8, 9, 12	Pseudo-hallucinations	When I'm at home studying, I hear my mother's voice calling me. She lives with me and calls me often, and this might make me think that I hear her calling me when she really is not
4, 5, 6	Vivid imaginations	When I really like a song, I can listen to it without needing to hear it in reality
1	Magical thinking	Sometimes I imagine situations that I want to happen to me and they happen
2	Thoughts interference	When I try to study my course material, the constant fights with my partner come into my head
2	Distraction	I have problems at home and I'm having a hard time concentrating on my studies
10, 12	Attentive/reflexive processes	After observing the faces of people for a long time, I see them differently. What I mean is that they are not the way I thought they were before
13	Mood fluctuations	There are days that I'm more energetic, and I look prettier because I don't see the wrinkles around my eyes and other days when I say "Today I would not even walk out the front door"
11	Affective illusions	When I'm in bed and alone at home, I see shadows on the walls and then I realize that it's the light from the street coming through the window
8, 12	Residual category	When I am very nervous, sometimes people and what they are doing and everything stop making sense and it seems like they are "a joke" [Derealization] When I have a slight fever, I hear voices. As a child this happened to me quite often [Organic hallucination]

RHS - Revised Hallucination Scale

me to do something or tells me something about someone"), centrality experiences (e.g., "Watching TV and thinking they were talking to me"), and visual hallucinations (e.g., "I see my mother or brother [as an apparition], and they show me their pain"); or provided tangential responses (e.g., "Listening to the song of Ana Belen, '…watching the time pass, the Gate of Alcalá'. I'm from Madrid and it makes me cry, because it brings back good memories of my days as a student").

On RHS item 1 ("My thoughts seem as real as actual events in my life"), the non-clinical sample described experiences classifiable as magical thinking (e.g., "Sometimes I imagine situations that I want to happen to me and they happen"), whereas the clinical sample described experiences reflecting dereistic thinking (e.g., "I believe that my brother was dead when he was really alive"). On RHS item 2 ("No matter how much I try to concentrate on my work, unrelated thoughts always creep into my mind"), the non-clinical sample described instances of thought interference (e.g., "When I try to study my course material, the constant fights with my partner come into my head"), whereas the clinical sample described obsessive-compulsive phenomena (e.g., "Sometimes I just attack people when I'm really a good person who hasn't done anything bad to anyone").

On item 10 ("When I look at things they appear strange to me"), the non-clinical sample described experiences related to an attentive/reflexive process (e.g., "After observing the faces of people for a long time, I see them differently. What I mean is that they are not the way I thought they were before"), whereas the clinical sample described experiences of derealization (e.g., "When looking at people, they sometimes seem strange, like they're not real, and the things in the house too").

On item 11 ("I see shadows and shapes where there is nothing there"), the non-clinical sample described affective illusions (e.g., "When I'm in bed and alone at home, I see shadows on the walls and then I realize that it's the light from the street coming through the window"), whereas the clinical sample reported centrality experiences (e.g., "I realize that they were there for me").

Only on item 6 ("In my daydreams I can hear the sound of a tune almost as clearly as if I were actually listening to it"), the two groups provided overlapping descriptions of experiences related to vivid imagination (e.g., in the non-clinical sample, "When I really like a song, I can listen to it without needing to hear it in reality", and in the clinical sample, "I often only have to imagine the song and I hear it in my head with all of its instruments and parts").

DISCUSSION

Our results show that people with schizophrenia and healthy university students endorsing RHS items provide very different descriptions of their experiences. What is different is the personal quality of these experiences.

Hallucinatory or hallucinatory-like experiences cannot be reliably and validly assessed only as a matter of frequency or intensity. Their assessment requires a precise characterization of the phenomenal quality of the experience. A very important difference between our two samples was that, in patients with schizophrenia, the experiences were intimately related to the person's identity, with enduring anomalies in their sense of self and with a characteristic metamorphosis of the self-world relationship (16-18), while in the non-clinical group they were related to a circumstantial event (e.g., a situation of mourning), or were reported as a single or isolated phenomenon.

As recently argued by Kendler (19), psychopathological assessment should neither be confined to determining the presence or absence of a given symptom, nor should it simply focus on surface symptoms picked for their reliability. Rather, it should look for deeper phenomena which may emerge only from careful phenomenological analysis.

The results of this study suggest that it is not advisable to analyze and study hallucinations, especially in non-clinical populations, using research protocols based solely on yes-or-no answers to questionnaires. This is not to deny the importance of studies on hallucinations in non-psychotic persons or the presence of hallucinations in normal population, but rather to challenge the kind of methodology used to date to assess this phenomenon. The issue addressed by this paper is the importance of the quality of such experiences, and what makes them similar or radically different from those in persons with schizophrenia.

We need an in-depth, fine-tuned characterization of the phenomenal quality of abnormal perceptual experiences, including hallucinations. This characterization can avoid diagnostic mistakes, e.g., overdiagnosis of schizophrenia, as well as the development of unreliable models of the pathogenesis of hallucinations based on an inaccurate assessment of abnormal perceptual experiences in non-clinical populations. Without such an effort to phenomenologically characterize normal as well as abnormal experiences, any attempt at a comparison is at risk of leading to non-informative conclusions (20).

A limitation of this study is that the non-clinical sample was made up only of students and cannot be considered representative of the general population. In addition, the details provided by the participants must be understood within the specific Spanish cultural context. In future research, it would be of interest to compare these results with those obtained in samples from other cultures, as well as in different clinical (e.g., manic-depressive) and non-clinical (e.g., adult general population) samples.

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Outcomes and moderators of a preventive school-based mental health intervention for children affected by war in Sri Lanka: a cluster randomized trial

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We aimed to examine outcomes, moderators and mediators of a preventive school-based mental health intervention implemented by paraprofessionals in a war-affected setting in northern Sri Lanka. A cluster randomized trial was employed. Subsequent to screening 1,370 children in randomly selected schools, 399 children were assigned to an intervention (n=199) or waitlist control condition (n=200). The intervention consisted of 15 manualized sessions over 5 weeks of cognitive behavioral techniques and creative expressive elements. Assessments took place before, 1 week after, and 3 months after the intervention. Primary outcomes included post-traumatic stress disorder (PTSD), depressive, and anxiety symptoms. No main effects on primary outcomes were identified. A main effect in favor of intervention for conduct problems was observed. This effect was stronger for younger children. Furthermore, we found intervention benefits for specific subgroups. Stronger effects were found for boys with regard to PTSD and anxiety symptoms, and for younger children on pro-social behavior. Moreover, we found stronger intervention effects on PTSD, anxiety, and function impairment for children experiencing lower levels of current war-related stressors. Girls in the intervention condition showed smaller reductions on PTSD symptoms than waitlisted girls. We conclude that preventive school-based psychosocial interventions in volatile areas characterized by ongoing war-related stressors may effectively improve indicators of psychological wellbeing and posttraumatic stress-related symptoms in some children. However, they may undermine natural recovery for others. Further research is necessary to examine how gender, age and current war-related experiences contribute to differential intervention effects.

Key words: Armed conflict, political violence, post-traumatic stress disorder, anxiety, depression, school-based intervention, prevention, Sri Lanka

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The civil war in Sri Lanka, which ended in 2009 when government security forces claimed victory over the Liberation Tigers of Tamil Eelam, has had an extensive impact on the mental health of the population (1,2). A number of epidemiological studies have documented the high prevalence of mental disorders among children in Sri Lanka. Two studies in the northeast of the country found prevalence rates of 25% and 30% for post-traumatic stress disorder (PTSD) and 20% for major depression (3,4). In addition, researchers have observed increased psychological distress among the general population and detrimental impacts of the long-term conflict on social structures, including family and community functioning in the north and east of Sri Lanka (5,6).

Despite this evidence of augmented mental health and psychosocial problems, resources for mental health in Sri Lanka remain scarce and centralized, as is common in low- and middle-income countries (LMIC) (7). Given this existing gap in health services, there is a need for easily accessible interventions that can rapidly be disseminated to larger groups of children. To this end, school-based interventions implemented by trained non-specialized staff have often been advocated (8-10).

A recent paper reviewed the evidence base of mental health and psychosocial support interventions for children in humanitarian settings (11). It reported two separate meta-analyses, focused on the most commonly used outcomes measured across studies: PTSD and internalizing symptoms. The first meta-analysis focused on four randomized controlled studies evaluating outcomes of school-based interventions for war-affected children and adolescents in Bosnia and Herzegovina (12), Indonesia (13,14), Nepal (15), and the Palestinian Territories (16), as well as a school-based intervention for children affected by the 2004 Tsunami in Sri Lanka (17). This meta-analysis did not find an overall effect for PTSD symptoms, and very high statistical heterogeneity of intervention effects on PTSD across studies. The second meta-analysis, including the studies in the first meta-analysis, as well as interpersonal group psychotherapy and creative play with adolescents affected by armed conflict in northern Uganda (18), and a group psychosocial intervention with mothers of young children affected by armed conflict in Bosnia Herzegovina (19), did show significant intervention benefits for internalizing symptoms. Given the high prevalence of mental health problems in settings of armed conflict and the increasing popularity of interventions for war-affected children in LMIC, more rigorous studies are clearly needed to assess outcomes of interventions.

This study aimed to evaluate the outcomes of a school-based secondary prevention intervention for children affected by ongoing war in northern Sri Lanka. We hypothesized that the intervention would lead to improved child mental health. In addition, we were interested in moderators and mediators of the intervention. Since school-based interventions for war-affected children have sorted diverse effects, examining moderators presents an important strategy to identify for whom and under what conditions intervention is most effective. Study of mediators is aimed at identifying why and how interventions have effects (20,21).

Gender and age have previously been shown to moderate effects of school-based interventions for children affected by armed conflict. In Indonesia, intervention was effective for PTSD and function impairment only for girls, whereas it was effective with regard to maintaining hope for both boys and girls (13,14). In Nepal, no main effects were found, but intervention effects were found for boys on general psychological difficulties and aggression and for girls on pro-social behavior. In addition, an age effect was observed, such that older children in the intervention condition showed larger improvements with respect to feelings of hope. Age and gender effects were also identified in the Palestinian Territories, where a school-based intervention showed treatment effects on diverse emotional and behavioral outcomes with school-aged children, particularly boys. For older children, intervention effects were only observed with adolescent girls (16).

Furthermore, the importance of past exposure to violence in relation to current experience of war-related stressors for mental health has been debated, but not assessed in evaluation studies among children (22-24). Several studies have shown that current experience of war-related "daily stressors" (e.g., lack of access to basic needs, domestic and neighborhood violence, substance use) partly mediated the association between exposure to violence events (witnessing/experiencing murders, bomb blasts, sexual violence, getting caught in crossfires, etc.) and PTSD symptomatology (25,26). Given this mediating role identified in cross-sectional surveys, we expected that intervention would be less effective in reducing psychological complaints for those experiencing continuing high levels of war-related daily stressors (i.e., a moderating relationship in this evaluation study).

Finally, we were interested in coping behavior as a potential mediator of intervention effects. Previous research with war-affected children has generally confirmed a relation between coping behavior and psychological symptoms, although it is not clear which specific coping styles (e.g., emotion-focused vs. problem-focused) are most protective in such settings (27). The evaluated intervention (described below) specifically aimed to enhance coping behavior. We expected that the intervention would increase the number of coping methods used by children, as well as their satisfaction with these coping methods, and that these increases would in turn be associated with decreases in psychological symptoms.

METHODS

Setting and participants

We collected data in the Tellippalai and Uduvil divisions of the Jaffna district in northern Sri Lanka, between September 2007 and March 2008. In August 2006, a peace agreement that had been observed since 2002 was abandoned, followed by closure of the only land road into the Jaffna peninsula. The subsequent period was characterized by rationed food and other essential supplies, curfews, road blocks, disappearances, extrajudicial killings, and skirmishes between the army and Liberation Tigers. Based on experiences in previous periods of intensified armed conflict in the region, we expected that safety of participants and staff, and continuation of schooling, could be guaranteed in this specific area.

We implemented a cluster randomized trial rather than an individually randomized trial to avoid contamination of the intervention within schools. We used a two-step randomization procedure. First, within district divisions, we randomly allocated each division to either the intervention or waitlist control condition (see Figure 1). Second, we randomly selected schools for inclusion in the study. All schools on the government-provided list were eligible.

In randomly selected schools, we screened children in grades 4 through 7 (ages 9-12) for meeting inclusion criteria using the Child Psychosocial Distress Screener (CPDS), a screening instrument with established cross-cultural construct validity that was developed for use with children affected by armed conflict (28,29). In accordance with the secondary prevention aims of the intervention (i.e., targeting symptoms of psychological distress and common mental disorders, and strengthening protective factors), this 7-item screening procedure assesses, with both children and teachers: a) the existence of risk factors (i.e., reporting exposure to war-related events, distress during such exposure, current psychological symptoms, and affected school functioning); b) the absence of protective factors (i.e., reporting a lack of social support and coping capacity). No children were excluded after meeting inclusion criteria, and a small group of children reporting severe mental problems during screening were provided individual supportive counseling in addition to being enrolled in the study (N=19, 4.8%).

We based our selection of 12 schools per study condition on an a priori power calculation. We calculated effect sizes of 1.10 for PTSD and 0.78 for depressive symptoms in earlier intervention outcome studies which applied the same instruments (30,31). To detect changes with the same effect sizes, with β equal to .02 (2-sided) and α equal to .95, we calculated that we needed a minimum of 18 and 35 children (for PTSD and depressive symptoms respectively) per study condition. To account for intracluster correlation, we multiplied 35 by $1 + (m-1)\rho$, with $m=30$ (average cluster size), $\rho = 0.1$ (intracluster correlation), and a power of 95%, resulting in an appropriate sample size of 137. To compensate attrition, we aimed at oversampling to reach approximately 180 chil-

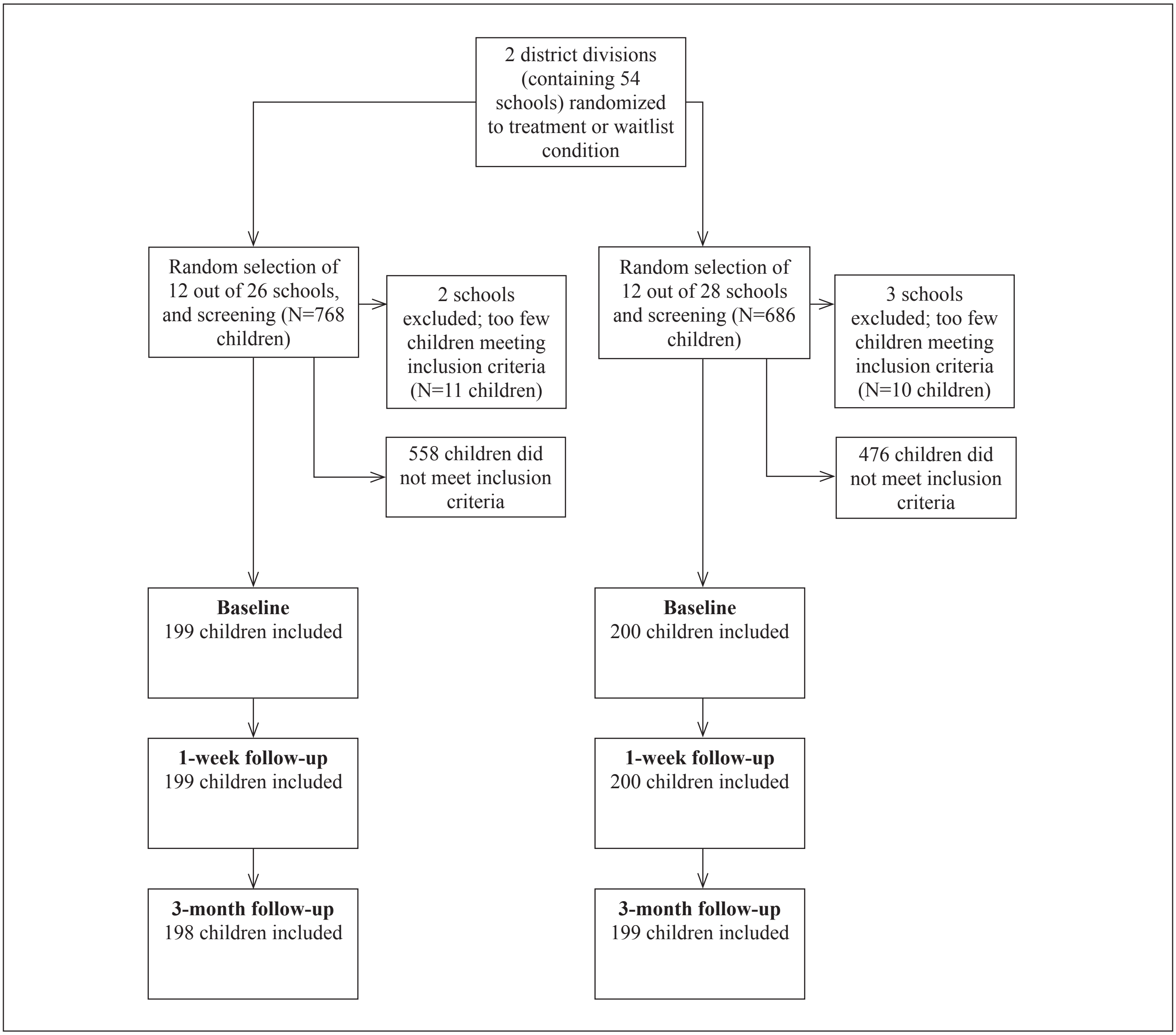

Figure 1 Participant flow diagram

dren per study condition. We estimated that at least one group of 15 children per school would meet inclusion criteria after screening, and therefore decided to sample 12 schools per study condition.

Intervention

The mental health intervention consisted of 15 sessions over 5 weeks of a school-based group intervention implemented by locally identified non-specialized personnel trained and supervised in implementing the intervention for one year prior to the study. Interventionists had at least a high school diploma and were selected for their affinity and capacity to work with children as demonstrated in role-plays and interviews.

The manualized intervention consists of cognitive behavioral techniques (psychoeducation, strengthening coping, and guided exposure to past traumatic events through drawing) and creative expressive elements (cooperative games, structured movement, music, drama, and dance) with groups of around 15 children, aimed at decreasing symptoms of common mental disorders and strengthening protective factors (32).

The intervention follows a specific structure within and between sessions, with the following foci: information, safety, and control in week 1 (sessions 1-3); stabilization, awareness and self-esteem in week 2 (sessions 4-6); the trauma narrative in week 3 (sessions 7-9); resource identification and coping skills in week 4 (sessions 10-12); and reconnection with the social context and future planning in week 5 (sessions 13-15).

Each session is divided into four parts, starting and ending with structured movement, songs and dance with the use of a "parachute" (i.e., large circular colored fabric). The second part is based on a "central activity" focused on the main theme of that week (e.g., a drama exercise to identify social supports in the environment, or drawing of traumatic events), and the third part is a cooperative game (i.e., a game in which all children have to participate in order to promote group cohesion).

The intervention was part of a larger public mental health program for children affected by war, including primary and tertiary prevention approaches.

Outcome measures

All standardized outcome measures were selected based on a preliminary qualitative study, which encompassed 18 key informant interviews, 20 focus group discussions, and 23 semi-structured individual interviews with children and family members identified as having mental health complaints (33). Qualitative data collection was also applied to construct new measures. Standardized rating scales were translated to Tamil using a translation monitoring form, which provides a structured method to prepare instruments for transcultural research (34).

Primary outcome measures

PTSD symptoms were assessed with the Child PTSD Symptom Scale (CPSS), a 17-item scale which measures symptoms of PTSD according to the DSM-IV with a 4-point response scale (range 0-51) (35). Internal reliability (Cronbach alpha) in our sample was .84. Depressive symptoms were examined with the 18-item Depression Self-Rating Scale (DSRS), which employs a 3-point response scale (range 0-36) (36). Internal reliability in our sample was .65. We assessed anxiety symptoms with the 5-item version of the Screen for Anxiety Related Emotional Disorders (SCARED-5; 3-point response scale, range 0-10) (37). Internal reliability in our sample was .52.

Secondary outcome measures

As a broad mental health outcome measure, we used the 25-item Strengths and Difficulties Questionnaire self-report version, which was available in Tamil and was validated in the Jaffna district (38). As suggested by the developers, the four subscales that refer to psychological difficulties were summed into an overall total difficulties score (range 0-40, internal reliability .78), and a fifth 5-item subscale assessed pro-social behavior (range 0-10, internal reliability .60).

Using the qualitative interviews of the preliminary study, we listed and categorized all psychological complaints reported by participants, and identified two groups of symptoms not well covered by standardized rating scales: supernatural complaints (being affected by evil spirits, witchcraft or demons) and war-related conduct problems (use of violence as a way to solve conflicts, imitating soldiers/rebels). Selecting the most commonly mentioned complaints, we constructed 6-item and 8-item scales, both with a 4-point answering format (range 0-18 and 0-24, internal reliability .58 and .61, respectively).

We also constructed a scale to assess function impairment (39). Following brief participant observation, collection of diaries, and focus groups with children, ten activities were selected that represented children's daily lives with respect to individual (e.g., hygiene, sleep), family (e.g., chores), peer (e.g., play), school (e.g., participation, homework), community (e.g., helping elders), and religious (e.g., worship at home) activities. Children were asked if they felt impaired in these activities on a 4-point answering format (range 0-30, internal reliability .80).

Moderators and mediators

Gender and age (in years) were assessed as part of the demographics section of the questionnaire. Exposure to violence and daily stressors were assessed with a locally constructed rating scale. After free listing major war-related adversities with 20 local humanitarian staff, we selected the most mentioned war-related events that children could be exposed to. This resulted in a dichotomous (yes/no) rating scale with 10 items reflecting past war exposure (range 0-10, e.g., seeing bomb blasts, witnessing murders, experiencing or witnessing torture, sexual violence) and 11 items assessing exposure to current war-related daily stressors (range 0-11, e.g., basic needs not being met, domestic violence, alcohol abuse, separation from family members, displacement).

Coping repertoire and satisfaction were assessed with the child-rated Kidcope (Younger Version for ages 7-2) (40). The Kidcope contains 15 questions concerning 10 coping strategies, which were assessed in relation to an imagined school problem (working hard but receiving bad grades) by asking which coping strategies were used (dichotomous items: yes/no) and how children rated their satisfaction with employed coping methods on a 3-point scale (1. not at all, 2. a little, 3. a lot; range 0-30; coping repertoire internal reliability .77).

Procedures and ethics

All instruments were interview-administered by a group of assessors not involved in service delivery, in a private environment at schools. These assessors were trained in a

3-week period in competently administrating rating scales. Assessors were not informed about which schools received intervention.

Before starting research activities, we discussed our plans with the local leadership, schools, and parents in community meetings. All children and parents provided written consent after being explained the purpose and proceedings of research activities. Formal ethical permission was granted by the VU University international review board and the Jaffna district education committee.

Statistics

To assess comparability of study conditions, demographic and mental health indicators at baseline were compared by χ^2 with continuity correction or Fisher exact test for frequencies, and independent sample t-tests for continuous measures.

Longitudinal changes on outcome measures were examined through latent growth curve modeling (LGCM) in a structural equation modeling framework (41). Conditional growth models were used to estimate the intervention main effect and to model moderating effects while controlling for main effects accordingly. All models controlled for clustering at the school level. LGCM was conducted in two steps. In a first step we modeled growth curves, using 1, 6 and 18 weeks as time points, and estimated the effect of intervention on changes over time. In the second step we added moderators and their main effects to explore potential variations in intervention effects.

Because only two participants had missing data on outcome measures at the third assessment (lost to follow-up at 18 weeks), we conducted a complete case analysis, excluding the two participants with missing data.

RESULTS

Characteristics at baseline

We compared demographic characteristics (gender, religion, type of house, occupation caregiver, household size), exposure to violence, ongoing war-related stressors, and scores on outcome measures, and found no statistically significant differences between study conditions (Table 1). The sample consisted of more boys (61.4%) than girls, was dominantly of Hindu religion (81.0%), and children were between 9 and 12 years old (mean 11.03±1.05).

Children were exposed to an average of two types of war-related events. The most common types were: seeing murdered bodies (51.9%), witnessing the death of family members (35.3%), and being involved in round-ups (32.6%). In addition, children reported an average of four types of ongoing daily stressors, most commonly: having been displaced (73.9%); being affected by poverty (67.9%), having difficulty meeting basic needs (62.7%), and quarrels in the neighborhood (62.7%). Intracluster correlation coefficients of outcome measures (ICC) ranged from -0.034 to 0.174.

Changes on outcome measures, moderators and mediators

First, we assessed crude mean changes (i.e., not corrected for clustered variance) as an exploratory analysis of changes on outcome measures (Table 2). These analyses showed sta-

Table 1 Baseline comparison of scores on exposure and outcome measures

	Treatment condition (N=199)	Waitlist condition (N=200)	t(df=397)	p	ICC
	Mean±SD	Mean±SD			
Exposure	1.93±1.34	1.91±1.45	.141	.888	-.006
Ongoing stressors	4.05±1.94	4.16±1.98	-.559	.576	.174
Screening	6.27±1.44	6.34±1.44	-.476	.634	.050
PTSD complaints	15.03±8.89	15.70±9.12	-.748	.455	.002
Depressive complaints	8.39±4.54	8.56±4.37	-.388	.698	.000
Anxiety complaints	3.29±2.13	3.17±2.16	.566	.571	-.005
Supernatural complaints	2.21±2.59	1.97±1.92	1.034	.302	.008
Behavioral complaints	2.00±2.84	1.99±2.23	.039	.969	-.029
Total difficulties (SDQ)	10.74±5.57	10.29±5.44	.823	.411	.005
Pro-social behavior	8.21±1.82	8.34±1.72	-.755	.451	.021
Coping methods	7.89±3.07	7.87±2.88	.082	.935	-.032
Coping satisfaction	18.29±8.11	18.23±7.44	.079	.937	-.034
Function impairment	3.64±4.47	3.23±4.37	.933	.351	.003

ICC - intracluster correlation coefficient; PTSD - post-traumatic stress disorder; SDQ - Strengths and Difficulties Questionnaire tistically significantly larger improvement for boys in the intervention condition on anxiety and function impairment (effect sizes .27 to .29). For girls, we found an unintended harmful effect, such that girls in the waitlist condition showed larger improvements in PTSD symptoms than girls in the intervention condition (effect size .37).

Second, to assess longitudinal trajectories of changes on outcome measures and the influence of moderating variables, we conducted LGCM, while correcting for clustering of variance within schools. We examined if the study condition predicted different growth trajectories and if gender, age, past exposure to violence and current experience of war-related stressors moderated the effects of intervention over time (Table 3). No statistically significant relationships between study condition and intercept estimates for our outcomes were found, confirming the comparability of study conditions at baseline. Longitudinal trajectories did not significantly differ between study conditions for our primary outcome measures (PTSD, anxiety, depression); however, we did find significantly different trajectories for a secondary outcome measure. Participants in the intervention condition showed more improvement (a decrease) in conduct problems over time than participants in the waitlist condition (slope estimate -.132; p=0.003). There was also a significant interaction of study condition and age for conduct problems, such that younger children showed more improvement than older children in the intervention condition (p=0.019).

In addition, we found a number of intervention effects for specific subgroups. Gender significantly moderated PTSD (slope estimate -1.169; p=0.009) and anxiety symptoms (slope estimate -.308; p=0.032), such that boys in the intervention condition showed more improvement over time than boys in the waitlist control condition. Also, a statistically significant interaction with age was identified for pro-social behavior (slope estimate .112; p=0.032). Increases in age were associated with smaller intervention benefits; in

Table 2 Mean change differences on outcome measures for boys and girls (baseline to 3-month follow-up)

Outcome	Boys				Girls			
	Treatment condition (N=122)	Waitlist condition (N=123)	Treatment vs. waitlist		Treatment condition (N=76)	Waitlist condition (N=78)	Treatment vs. waitlist	
	Mean± SD	Mean± SD	t (df=243)	p	Mean±SD	Mean±SD	t(df=152)	p
PTSD symptoms	5.49±8.15	5.49±7.75	-.004	.997	4.83±8.17	7.88±8.49	-2.274	.024^{b}
Depressive symptoms	1.64±4.80	1.62±4.48	.033	.974	1.42±3.86	2.03±4.02	-.951	.343
Anxiety symptoms	1.70±2.46	1.07±2.21	2.090	.038^{a}	1.29±2.44	1.55±2.43	-.667	.506
Total difficulties	3.35±5.55	2.07±5.55	1.809	.072	3.37±5.18	3.06±5.59	.350	.727
Supernatural complaints	1.11±2.53	0.43±1.75	1.667	.097	1.09±2.49	0.77±1.97	.895	323
Conduct problems	0.94±2.55	0.60±2.21	1.103	.271	0.55±1.85	0.27±2.83	.733	.465
Pro-social behavior	0.11±2.11	0.12±1.91	-.067	.947	-0.30±1.49	-0.09±1.87	-.780	.437
Function impairment	2.13±4.27	0.94±3.89	2.276	.24^{a}	2.00±4.15	1.60±5.33	.515	.607

PTSD - post-traumatic stress disorder; ^{a}effect sizes .27 to .29; ^{b}effect size .37

Table 3 Model estimates of longitudinal changes on outcome measures, with gender and age as moderators

Outcome	Intercept^{a}		Slope: main effect^{b}		Slope: interaction with gender^{c}		Slope: interaction with age^{d}		Slope: interaction with past violence exposure^{a}		Slope: interaction with current stressors	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
PTSD symptoms	-.306	.879	.281	.332	-1.169	.444**	.-.293	.261	.001	.134	.244	.108**
Depressive symptoms	-.385	.454	.115	.112	-.206	.242	.134	.152				
Anxiety symptoms	-.075	.188	-.037	.065	-.308	.144**	.035	.062	-.048	.050	.066	.032**
Total difficulties	.037	.516	-.198	.280	-.409	.225	-.102	.184				
Supernatural complaints	.149	.280	-.121	.064*	-.116	.101	-.022	.071				
Conduct problems	.080	.209	-.132	.045***	-.089	.100	.112	.048**	-.028	.076	.015	.043
Pro-social behavior	-.030	.166	.016	.052	-.101	.095	-.107	.050**	.014	.032	-.035	.020
Function impairment	-.427	.482	-.036	.143	-.346	.178	.102	.109	.000	.111	.167	.069**

PTSD - post-traumatic stress disorder; ^{a}average score at baseline corrected for clustering; ^{b}change on outcome measure over 0, 6 and 18 weeks; ^{c}a negative estimate indicates decreases in the outcome for boys; ^{d}a negative estimate indicates decreases in the outcome for every year older; *statistically significant at α <0.06, **statistically significant at α <0.05, ***statistically significant at α <0.01

other words the intervention was effective in increasing pro-social behavior only for younger children.

We examined past violence exposure and current experience of war-related daily stressors as moderators (Table 3). Because none of the previous analyses showed statistically significant different change trajectories on depressive symptoms, supernatural complaints, and general psychological symptoms, we did not examine this group of outcome measures in these analyses. We identified an important moderating role in experience of current war-related daily stressors. This experience moderated treatment effects, such that children in the intervention condition with low levels of such stressors showed larger improvements on PTSD (estimate .244; p=0.024), anxiety (estimate .066; p=0.039), and function impairment (estimate .167; p=0.016) than children in the waitlist condition. Model fit of the LGCM were acceptable for just about all models, ranging from 0.87 to 1.00 on the comparative fit index.

Finally, we examined coping behavior as a possible mediator of intervention effects. Analysis of both crude mean changes and LGCM failed to show differences between study conditions with regard to trajectories of coping repertoire and coping satisfaction. Since a significant relation between intervention and a putative mediator is a precondition for a mediating role (and this condition was not met), we did not further investigate the potential role of coping behavior.

DISCUSSION

This evaluation of a secondary preventive intervention with school-going children in Sri Lanka adds to the emerging evidence for mental health and psychosocial support interventions in areas affected by armed conflict. Similar to earlier school-based interventions for war-affected children, differential intervention effects were observed. We found a main effect on a locally constructed scale for conduct problems, with stronger intervention benefits for younger children. These conduct problems, including for example a tendency to use violence as a means to solve conflict, imitation of soldiers, showing disrespect to elders, formed an important category of war-related psychological complaints as explained by children, parents, and teachers in our qualitative study. Furthermore, intervention effects were identified for children experiencing lower levels of current war-related daily stressors (PTSD, anxiety, function impairment), boys (PTSD and anxiety complaints), and younger children (pro-social behavior). However, we identified an unintended harmful effect of intervention for girls on PTSD symptoms.

Before we discuss these findings in more detail, we point to a number of limitations of the applied study methodology. First, although we did not disclose study condition to assessors and we selected research assessors external to intervention activities, we were not able to control possible disclosure of study condition by children participating in the study. Second, although we did include a locally validated measure (the Strengths and Difficulties Questionnaire), our primary outcome measures for PTSD, depression, and anxiety have unknown local criterion validity. Third, internal reliability of some of the measures was slightly less than acceptable (notably for anxiety symptoms). Despite these limitations, this study adds to the literature a rigorous intervention outcome study adhering to the CONSORT guidelines, in a pragmatic trial design (42).

Although some promising intervention effects were identified, the finding that girls in the waitlist condition showed better improvements over time on PTSD symptoms than girls in the intervention condition is an important unexpected outcome of this study. As a possible explanation of this finding, we point to the overlap in the moderating effects of gender and current experience of war-related daily stressors. Both variables moderated relations between study condition and changes on PTSD and anxiety. It is possible that the experience of current war-related daily stressors was different for boys and girls, and that these differences are driving the differential effects of intervention. In addition, it is possible that specific aspects of the working ingredients of the intervention (e.g., strengthening specific coping methods or social support strategies) contributed to differential effects for boys and girls. Such assumption would be consistent with findings of previous psychological interventions with war-affected children and adolescents, in which gender-specific effects are often observed (13-15,18). In the case of this intervention, it may be important to consider implementation with separate gender groups.

Our findings highlight the question of what may be appropriate interventions to target the mental health impacts of war on children. On the one hand, based on the lack of identified main intervention effects on primary outcomes in this study, it may be argued that clinical psychotherapeutic interventions rather than school-based interventions would be a more appropriate choice of intervention. For example, studies in high-income countries have found support for trauma-focused cognitive behavioral therapy and eye movement and desensitization reprocessing (43). However, we would still argue for the importance of primary and secondary prevention interventions with children affected by armed conflict for two reasons. First, these interventions may have benefits on outcomes beyond PTSD, which are important – albeit much less studied – consequences of war on the mental health of children (33). For example, this study showed improvements on conduct problems, anxiety, pro-social behavior, and function impairment, and earlier studies additionally showed benefits on hope, social support, aggression, and general psychological difficulties (13-15). Second, although observed effects of such interventions may have so far been smaller in effect size compared to individual clinical interventions and may be limited to specific population groups, such interventions carry the potential to reach larger population groups with fewer resources and in more accessible settings, and therefore may have similar effects on the wellbeing of populations at large as clinical interventions (44). However, our findings clearly point to the need for more careful efforts to identify the specific modifiable pathways of risk and protective factors for children affected by armed conflict (45,46), in order to prevent undermining natural recovery (14,47). Such research was judged a key priority in a recent effort to set research priorities for mental health and psychosocial support in humanitarian settings (48,49).

This study shows the possible limitations of the current tendency in LMIC for task shifting and integration of mental health interventions in community-based settings. It is not unreasonable to expect that when interventions move from clinics to community settings, and from being implemented by specialized professionals to implementation by lay workers, intervention effects will be more strongly moderated by contextual factors (e.g., poverty, exposure to violence, social marginalization). This study suggests that it will be crucial for evaluations of mental health interventions to explore not only if interventions are effective but also *how* they may be effective, in order to tailor interventions to context and population groups.

It has previously been argued that – given the great scarcity of mental health professionals in LMIC – the role of the clinician in LMIC should primarily be that of a public health practitioner leading the effort to scale-up mental health services and increase coverage of care (50). This and other studies show that clinicians in violence-affected areas may to this end successfully oversee task shifting to trained lay health workers to promote mental health (e.g., increase coping, social support, hope) and decrease distress and impairment. In settings with ongoing stressors, however, clinicians need to be wary of contextual moderators of preventive efforts, and treatment of PTSD symptoms specifically may require a more specialized approach, or a different treatment modality (e.g., an individual or family-based approach).

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Peer support among persons with severe mental illnesses: a review of evidence and experience

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Peer support is largely considered to represent a recent advance in community mental health, introduced in the 1990s as part of the mental health service user movement. Actually, peer support has its roots in the moral treatment era inaugurated by Pussin and Pinel in France at the end of the 18th century, and has re-emerged at different times throughout the history of psychiatry. In its more recent form, peer support is rapidly expanding in a number of countries and, as a result, has become the focus of considerable research. Thus far, there is evidence that peer staff providing conventional mental health services can be effective in engaging people into care, reducing the use of emergency rooms and hospitals, and reducing substance use among persons with co-occurring substance use disorders. When providing peer support that involves positive self-disclosure, role modeling, and conditional regard, peer staff have also been found to increase participants' sense of hope, control, and ability to effect changes in their lives; increase their self-care, sense of community belonging, and satisfaction with various life domains; and decrease participants' level of depression and psychosis.

Key words: Peer support, self-disclosure, role modeling, empathy, recovery

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> *"As much as possible, all servants are chosen from the category of mental patients. They are at any rate better suited to this demanding work because they are usually more gentle, honest, and humane"* – Jean Baptiste Pussin, in a 1793 letter to Philippe Pinel (1).

Peer support among persons with severe mental illnesses has been largely considered a recent phenomenon, with the first published account of this presumably "new" form of service delivery dating to 1991 (2) and attributed to the mental health service user movement that began in the 1970s (3). As the passage quoted above suggests, however, the idea that persons in recovery may be especially well-suited to helping others suffering from a severe mental illness has a longer, if unacknowledged, history.

At the time of his writing the letter from which the above passage was taken, Pussin was serving as the governor (i.e., superintendent) of the Bicêtre Hospital in Paris, where he had himself been a patient. Pinel had been assigned to become the chief physician there, and had asked Pussin to describe how the hospital was functioning prior to his arrival. As noted above, one of Pussin's key management strategies was to hire as many staff for the hospital as possible from among recovered patients. In addition to being "gentle, honest, and humane", Pinel found these former patients recruited by Pussin to be "averse from active cruelty" (which was a common management strategy in the asylums of the day) and "disposed to kindness" (4) toward the patients in their care. It was then to a significant degree through the hiring and deployment of such staff that Pinel, and Pussin, were able to do away with shackles and abuse, and institute what has since come to be called the "moral treatment" era (5).

Recognition of the value of peer support among persons with severe mental illnesses thus goes back centuries, with the practice showing up periodically and with apparently good effect throughout the history of psychiatry. For example, Harry Stack Sullivan used a similar strategy of hiring patients who had recovered from psychotic episodes to staff his inpatient unit in the US in the 1920s (5).

Over the last twenty years, the practice of peer support has virtually exploded around the globe, with many more recovering persons being hired to provide peer support than ever before. Estimates place the number of peer support staff currently to be over ten thousand in the US alone (6), and this number continues to rise at an astonishing rate despite the global recession and high unemployment rates. It is thus timely to step back from what has become something of a juggernaut within contemporary mental health policy and practice to review what is known thus far about this particular strategy within the context of community-based practice. This paper will do so by, first, reviewing the existing evidence base and, second, by describing some of the concerns that have emerged as more peers have been hired, along with some of the strategies that have been found useful in addressing and overcoming these concerns.

EVIDENCE

> *"Yeah, it's nice to know… it's like having someone that you can confide in, you feel like you're kind of in the same boat… She was depressed, homeless, with a drug problem. And that's where I was. And I'm newer to it. She's got a car, she's got her apartment, and I'm building those things, and it's just… you know, somebody who really knows"* – Person with severe mental illness describing experiences with a peer provider

Much of the research conducted on peer support to date can be conceptualized as falling into one of three categories lying along a linear continuum (7,8). The first stage of research involved *feasibility* studies, in which the main aim was to demonstrate that it was in fact possible to train and hire persons with histories of severe mental illnesses to serve as mental health staff. Given the history of stigma and discrimination against persons with severe mental illnesses, it was necessary first to show that such people could perform the tasks involved. At this initial stage, the roles for peer staff were conceptualized primarily as ancillary to and supportive of conventional staff as case manager aides or companions; roles for which few specific skills or competencies were required. Four randomized controlled trials conducted during the 1990s demonstrated consistently that peer staff were able to function adequately in these roles and to produce outcomes at least on a par with those produced by non-peer staff (9-12), with two studies showing slightly better outcomes for those receiving peer support in addition to usual care as compared to those receiving usual care only (9,11).

The second stage of research involved studies comparing peer staff and non-peer staff, with both functioning in *conventional* roles such as case managers, rehabilitation staff, and outreach workers. In these studies of conventional services provided by peers, most studies again found that peer staff functioned at least as well in these roles as non-peer staff, with comparable outcomes (13-16). Several studies in this second stage of research began to detect consistent differences between these two conditions, however, with peer-delivered services generating superior outcomes in terms of engagement of "difficult-to-reach" clients, reduced rates of hospitalization and days spent as inpatient, and decreased substance use among persons with co-occurring substance use disorders (17-20). These promising findings led investigators in this area to emphasize the need for the next generation of research to specify and begin to evaluate the ways in which peer staff may perform their roles differently from non-peer staff, based on their first-hand experiences of disability, stigma, and recovery, and whether new roles can be created in the mental health system in which these life experiences can be used most effectively to promote the recovery of others (8,21-24).

In other words, insofar as the second stage of research evaluated the functioning of peers in providing conventional services within conventional roles, these studies stopped short of investigating whether or not peers could perform new functions in new roles that were unique to them because they were derived specifically from their own first-hand experiences of illness, recovery, and service use – experiences that were not shared by non-peer staff.

It has thus required a third generation of studies to begin to answer the following questions: a) Do interventions provided by peers differ in any significant way from the same interventions provided by non-peers? b) Are there any interventions that cannot be provided by people who do not have their own first-hand experience of mental illness, which thereby make peer support a unique form of service delivery? c) If so, what are the active ingredients of these aspects of peer support, and what outcomes can they produce?

Thus far, the literature has suggested three basic contributions of peer support that would seem to be unique to, or at least especially well-suited for, peer staff. The first is the instillation of *hope* through positive *self-disclosure*, demonstrating to the service recipient that it is possible to go from being controlled by the illness to gaining some control over the illness, from being a victim to being the hero of one's own life journey (23,25). The second expands this *role modeling* function to include self-care of one's illness and exploring new ways of using experiential knowledge, or "*street smarts*", in negotiating day-to-day life, not only with the illness but also with having little to no income, with being unstably housed, with overcoming stigma, discrimination, and other trauma, all the while trying to negotiate the complex maze of social and human service systems (23,26).

The third aspect of peer support focuses on the nature of the relationship between peer provider and recipient, which is thought to be essential for the first two components to be effective. This relationship is characterized by trust, acceptance, understanding, and the use of *empathy*; empathy which in this case is paired with "*conditional regard*" – otherwise described as a peer provider's ability to "read" a client based on having been in the same shoes he or she is in now. Their ability to empathize directly and immediately with their clients can be used in this particular way by peer providers because they may have higher expectations and may place more demands on their clients, knowing that it is possible to recover, but also that it takes hard work to do so (e.g., "I know how hopeless you feel now, but I also know that you can work toward a better life") (26-27). These expectations may at times lead to conflict, but also are just as likely, if not more so, to lead to encouragement and inspiration (26-29).

While this third stage of peer research – which focuses on any potential *unique* qualities that alternative peer-provided services may have – is only just getting underway at this time, a couple of recently completed studies are suggestive of what may be in store. For example, our research team completed a study, funded by the National Institute of Mental Health, of culturally-responsive, person-centered care for psychosis among adults of African and/or Hispanic origin in which peer staff played two new roles that were developed specifically for that study. Using the evidence-based practice of illness management and recovery (IMR) as our comparison condition (30), we trained peer staff to provide one of two sets of interventions. The first set involved acting as an advocate to facilitate person-centered care planning for participants to engage them more actively in directing their own treatment and recovery. The second set involved acting as a "community connector" to support participants in pursuing the community activities and roles they had identified in their care plan. A total of 290 adults with serious mental illness were randomly assigned to one of three conditions that built on each other in a graduated way: a) usual care plus the invitation to participate in the evidence-based practice of IMR; b) usual care plus IMR plus a peer-facilitated person-centered planning process (PCP); and c) usual care plus IMR and PCP with the addition of the peer-run community connector program.

In this study, we found benefits to both forms of peer support as compared to usual care plus IMR. In particular, the addition of a peer-facilitated person-centered care planning process increased the degree to which participants felt their care was responsive and inclusive of non-treatment issues (such as housing and employment), and increased their sense of control and ability to bring about changes in their lives. The peer-run community connector program increased their sense of hope and degree of engagement in managing their illness, degree of satisfaction with family life, positive feelings about themselves and their lives, social support, and sense of community belonging. Finally, and perhaps most unexpectedly, the peer community integration program decreased participants' level of psychotic symptoms, while increasing the amount of distress they experienced due to these symptoms. Qualitative data suggested that this increase in distress may have been due to the fact that participants were encouraged to do more with their lives and perceived their remaining symptoms as barriers to pursuing activities that interested them, while in the past these same symptoms, though more prominent, were not viewed in the same way as barriers to a fuller life (31).

The second study built on earlier findings, mentioned above, which suggested that peer support might be useful in decreasing rates of hospitalization and days spent in the hospital for persons with histories of multiple hospitalizations. For this study, we trained and deployed peer staff to serve as "recovery mentors" (the name they chose for themselves), a broader role that integrated the interventions of both the PCP advocate and community connector of the earlier study. Feedback from both participants and peer staff in the previous study indicated a strong preference for having both of the functions of advocacy and community integration performed by one person in a continuous manner, rather than requiring the participant to develop trust in two different people. As a result of this feedback, we developed a model of recovery mentoring that absorbs these and other related functions into the role of one peer provider who, most importantly, was trained in how to use his or her own life experiences to the benefit of his or her clients. In addition to the positive uses of self-disclosure, peer staff were trained in developing empathic relationships, using conditional regard, and role modeling self-care.

For this study, participants were randomly assigned either to usual care or usual care plus a peer recovery mentor. To be eligible, patients had to have experienced two or more hospitalizations during the 18-month period prior to the current admission and have a documented history of a severe mental illness. Data were collected at baseline (during index hospitalization) and again at 3 and 9-month post-discharge. The main outcomes were the number of hospitalizations and hospital days during the 9-month study period, measured through a combination of medical records, administrative databases, and self-report.

We used an intention-to-treat analysis including a total of 74 participants. Primary statistical analyses utilized a univariate analysis of covariance to assess differences between the conditions in inpatient admissions and total number of days in the hospital, both at the end of 9-month participation and controlling for pre-18-month baseline levels. Partial eta squared (η^2) served as an estimate of between-condition effect size. For the primary outcome analyses, we tested if the readmission experiences (events and days) reflected statistically significant changes at the end of the study between the conditions (recovery mentors or control) as the between-subjects independent variable. Unlike generalized linear models, linear mixed models – which are commonly employed in community-based research – examine variation within individuals, at the same estimating levels of correlation with other key factors, and are capable of interpolating values for uneven numbers of repeated measurements. We set the significance criterion at $p \leq 0.05$, and, in the case of the hospitalization experience, used a one tailed test based on our hypothesis that having a recovery mentor would be associated with less use of the hospital.

There were statistically significant main findings for the number of hospitalizations and the number of days spent in the hospital, with participants assigned recovery mentors doing significantly better than those without a recovery mentor on both number of admission events (0.89±1.35 vs. 1.53±1.53 events, F=3.07, df=1, p<0.042, one tailed) and number of hospital days (10.1±17.31 days vs. 19.1±21.6 days, F=3.63, df=1, p<0.03, one tailed). In addition, we analyzed a range of measures tapping into possible intervening variables that might reflect the therapeutic mechanisms of peer support, and these findings supported the general hypothesis that the assignment of a recovery mentor also had other beneficial effects. Consistent with previous studies, there was a significant decrease in substance use for people receiving recovery mentors. New findings, however, included a decrease in depression and increases in hope, self-care, and sense of well-being (32) – all important domains of recovery that are consistent with the model of peer support described above (33-35).

Currently, we are pursuing the next step in this line of research, conducting a randomized controlled trial that controls for frequency and intensity of contact and compares the effectiveness of peer recovery mentors to peer case managers, on the one hand, and non-peer recovery mentors, on the other, to attempt to tease out the most crucial elements of peer support (i.e., the third of our three questions above). While obviously much work remains to be done in understanding both the nature and effectiveness of peer support, much work has been done already, and much more is being carried out currently, to bring this central practice of the 18th century moral treatment era into the mainstream of 21st century community-based care.

EXPERIENCE

Since the hiring of peer staff both stimulates and requires significant changes in the culture of traditional mental health settings, as much, if not more, has been written about challenges involved in implementation, and strategies for overcoming these challenges, as about research on outcomes. We review both the challenges and strategies below, drawing from our twenty years of experience in recruiting, training, deploying, and retaining peer staff and from the experiences of others involved in this work (27,36-44). We begin with the five most common questions asked by staff and administrators in mental health settings, followed by brief answers to each. We then present a series of recommendations for implementation.

Common practitioner concerns

Aren't peer staff too "fragile" to handle the stress of the job?

No**.** Jobs in mental health settings are stressful for everyone, not just for peer staff. As a result, self-care is an important area of focus for *all* mental health staff, not just peer staff. It is true, however, that peer staff are asked to take on the additional burdens of disclosing some of their most personal experiences and putting these experiences to good use in helping others as well as bearing the additional scrutiny of having to represent all peers (i.e., if they do not do well in the job, it may factor in whether or not the agency will continue to value peer services). Managing these processes are important foci for supervision. With respect to "fragility", though, people in recovery should be considered to have shown a considerable amount of persistence and resilience, as opposed to fragility, in battling back against the illness. Recovery, after all, is hard, taxing, and ongoing work.

Despite the considerable efforts peer staff have had to make to overcome the more debilitating aspects of the illness, many administrators continue to worry about potential relapses or setbacks and have looked for various indicators of stability in their hiring practices. These have taken various forms, such as stipulating at least a year since last hospital admission or two years since using substances. In addition to lacking reliability in terms of their predictive value, instituting such requirements in hiring would constitute discrimination under many countries' disability rights legislation. As long as the person can perform the essential functions of the job, consideration of his or her psychiatric history in terms of the use of arbitrary criteria of functioning is no longer acceptable practice. This is one of the many significant changes that are introduced when mental health practitioners shift from viewing an individual with a mental illness as a patient to viewing him or her as an employee.

Don't peer staff relapse?

All employees, including peer staff, take off time because of illness. Many staff who are not identified as peers take off time because of mental health issues. The same expectations for sick time and accommodations for illness should be applied for all employees, including peer staff. Even when facing adversity or not feeling well, peer staff can still serve as role models in showing the kind of determination, resilience, and persistence it takes to come back to work following a difficult period. In addition, the stress of working may be considered less onerous in comparison to the stress of prolonged involuntary unemployment, poverty, and isolation.

Can peer staff handle the administrative demands of the job?

While some people might not have worked for a prolonged period before joining the peer workforce, and others might have had limited educational opportunities, many peer staff are equally if not more competent at administrative tasks than other staff members. For those who do struggle with these tasks, peer staff can be shown how to manage the administrative details of their jobs and, when needed, provided with supports to enable them to do so. As just one example, for people with cognitive or linguistic impairments, such strategies as speaking into a recorder and having one's notes transcribed may be useful in meeting documentation requirements.

Won't peer staff cause harm to clients by breaking confidentiality or by saying the "wrong" things?

Peer staff, like all other employees, are expected to conform to policies and regulations regarding confidentiality and privacy. Training and supervision support this, and peer staff are employees who are just as responsible as any other staff for keeping client information confidential. There is no reason to believe that this will be any more difficult for peer staff than for anyone else. In fact, given the sensitivity peer staff have to privacy issues, based on their own experiences as a service user, it is more likely that they will guard their clients' confidentiality even more so than non-peer staff. Also, there is no reason to believe that peer staff who have been trained and are supervised will be more likely than other staff to say the "wrong" things. If "wrong things" include demeaning and disrespectful treatment, then peer staff may indeed be less likely to engage in this kind of behavior, as initially witnessed and remarked upon by Pussin.

Won't peer staff make my job harder rather than easier?

Peer support provides an important and useful complement to existing mental health services. Peer staff can be especially effective in engaging people into care and acting as a bridge between clients and other staff. When well-trained and supervised, peer staff can serve rather to lessen the load carried by other practitioners, enriching consumers' lives while allowing other staff to concentrate on their respective roles.

Effective strategies for implementing peer services

The following are some of the strategies that have been found effective in introducing peer support into conventional mental health settings:

- A clear job description and role clarification – fully endorsed by key stakeholders (including program administrators, supervisors, and potential coworkers) – with relevant competencies, and a clear policy for evaluating competencies and job performance.
- Involving non-peer staff and organizational leaders, as well as people in recovery, along with organizational leaders early and throughout the process of creating peer positions, including in formulating job descriptions and making hiring decisions.
- Identifying and valuing the unique contributions that peers can make to the programs and settings where they will work. For example, the optimal benefits of hiring peers as part of case management teams will not be realized if the peer staff are only trained and expected to carry out traditional case management tasks. In other words, it is important that peers have jobs in which they can use the skills they have acquired through their life experiences and training, rather than being assigned tasks that other staff are simply too busy to perform (such as filing or providing transportation).
- Starting with at least two peer staff within any program, team, or work unit to facilitate their transition to this new role and giving them the opportunity to share job experiences and provide mutual support to each other.
- Having a senior administrator take on the role of peer staff "champion" who can address issues that arise on a systemic – as opposed to individual – level and who keeps the development of peer services a priority for the agency.
- Providing training for peer staff that covers the specific skills and tasks required by their roles, such as using their recovery story to the benefit of the people they work with, effective listening skills, creating positive relationships, goal identification and setting, what to do in an emergent situation, agency documentation requirements and how to fulfill them, ethics and confidentiality, boundaries, self-care, and ways of resolving conflicts in the workplace, including how to talk openly about issues of power and hierarchy within the organization.
- Providing supervision for peer staff that concentrates on job skills, performance, and support rather than on the person's clinical status, and which establishes expectations of peer staff that are equivalent to the agency's expectations of other employees.
- Providing training and education for non-peer staff that covers relevant disability and discrimination legislation and its implications for hiring and the provision of reasonable accommodations, expectations of peer staff, ethics, boundaries, adopting person-first language and a respectful attitude toward all coworkers, and ways of resolving conflicts in the workplace, including how to talk openly about issues of power and hierarchy within the organization.
- Dissemination of success stories that inspire hope and persistence in all parties.

CONCLUSIONS

As suggested by the list of strategies above, implementing peer support services in mental health settings is messy and complicated work that brings about significant culture change in these institutions. Bringing about such change has been one of the driving forces behind the dissemination of peer support since the beginning, however, as we saw in the case of Pinel and moral treatment. While the need for such change may be less obvious today – in that people with severe mental illnesses are no longer in shackles and subjected to ongoing cruelty and abuse in most societies – there remains a pressing need to restore to such persons their basic human rights as full citizens of their communities. The forms of deprivation and discrimination experienced today may be different, but they require changes of the same order of magnitude as those introduced through moral treatment.

The transformation from being a service recipient to being a service provider represented by peer support is one concrete manifestation of this order of magnitude, and contributes to the needed changes in many more ways than simply by improving individual outcomes as evidenced by controlled research trials.

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Lessons learned in developing community mental health care in Australasia and the South Pacific

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This paper summarizes the findings for the Australasia and Pacific Region of the WPA Task Force on Steps, Obstacles and Mistakes to Avoid in the Implementation of Community Mental Health Care. We present an overview of mental health services in the region; discuss policies, plans and programmes; chart progress towards achieving community-oriented services, and detail the lessons learned.

Key words: Community mental health care, Australasia, South Pacific, mental health services, lessons learned

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This paper is one of a series which describes the development of community mental health care in regions around the world (see 1-3). In implementation of the WPA Action Plan 2008-2011 (4,5), a Task Force was established to produce a WPA Guidance on Steps, Obstacles and Mistakes to Avoid in the Implementation of Community Mental Health Care. The purpose, methods and main findings of this Task Force have previously been published (6). This article describes these issues in relation to Australasia and the South Pacific.

Australasia includes Australia and New Zealand. While there are areas within both countries that are impoverished, overall they can be classified as high income countries. The population of Australia as at June 2009 was 21,874,000, with the indigenous population of Aborigines and Torres Strait Islanders representing 2.5% of the total. The population of New Zealand was estimated at June 2009 as 4.27 million, with the indigenous population of Maori representing 15% of the population. The Pacific Island states are mainly low income countries, broadly grouped within Micronesia, Melanesia and Polynesia. The population is increasing rapidly. It is currently estimated at 32 million, with Melanesia the largest population group at around 7 million and Polynesia accounting for 1.2 million.

Based on recent epidemiological surveys, lifetime prevalence rates of mental disorders is 45% in Australia (7) and 46.6% in New Zealand (8), with around 20% prevalence rates in both countries over the past year. There is no comparable data available for Pacific nations.

MENTAL HEALTH SERVICES IN THE REGION

Mental health services in Australia and New Zealand have developed along similar lines in terms of models of service delivery. However, some Australian jurisdictions, such as Victoria, have more in common with developments in New Zealand than others. Pacific nations, by comparison, are at a rudimentary stage of development and are just beginning to set in place the processes to properly address the needs of their people with mental illnesses.

Both Australia and New Zealand have a mix of local and regional, public and private mental health services, albeit the private system in New Zealand is insignificant compared with Australia. These services provide mental health care for children and adolescents, adults and the elderly. While significant service gaps remain in some areas and many services are still not adequately integrated (9), taking the countries as a whole, a comprehensive mix of hospital and community based services has been established (Table 1).

It is important to note that in both Australia and New Zealand, and especially in the latter, most of the services included in the table have been further differentiated in terms of specialization, providers and target groups. Specialist community services, supported in some cases by residential programmes, have been established to provide care for people with specific disorders and circumstances, including forensic psychiatry, maternal mental health, peer support, early psychosis, mental health of indigenous populations (especially in New Zealand, with the establishment of Maori and Pacific Island mental health services), homelessness, eating disorders, addictions (ranging from alcohol and drugs, to problem gambling and Internet addictions), post-traumatic disorder (covering sexual abuse and family violence), affective disorders, anxiety disorders.

There is now a range of providers, from primary health care

Table 1 Range of mental health services available in Australasia and the South Pacific

Service	Australia	New Zealand	Pacific nations
Primary health care	+	±	+
Outpatient/ambulatory clinics	+	+	±
Community mental health teams	+	+	−
Acute inpatient care	+	+	±
Long-term residential care in the community	+	+	−
Rehabilitation, work, occupation	+	+	±

+ present, ± variable, − absent

clinicians to non-governmental organizations (NGOs) and peer workers, providing services for people that would otherwise have been the exclusive domain of specialist clinicians.

While many rural areas have similar service and staffing issues to those of low-medium income countries, most medium to large urban areas have a full range of clinical and non-clinical mental health professionals employed in services and are developing new occupational classes of workers to be employed in them. Support for rural areas is often provided by larger urban services and visiting practitioners.

By contrast, as Table 1 indicates, mental health services in Pacific nations are significantly underdeveloped. They are delivered mainly through village or community based, primary health care clinics, linked in some cases to regional clinics or national hospitals. In higher population nations, inpatient units are also available, but often the care they provide is not particularly differentiated in terms of specific disorders. Moreover, some inpatient units remain unused because of concerns about safety and/or insufficient staff to manage patients. As a result, some people with serious mental illnesses are detained in police custody, without access to appropriate treatment (10).

Fully trained mental health clinicians are employed in some nations but are not employed in anywhere near sufficient numbers to address need. Pacific nations rely instead on generally trained health professionals (often nurses), NGOs and other workers such as traditional healers, who are engaged to assist in the care of people with mental illnesses and addictions. There are few permanently based psychiatrists, although this situation is ameliorated to some extent by the employment of visiting psychiatrists from Australia and New Zealand and in some cases America.

POLICIES, PLANS AND PROGRAMMES

The establishment of recovery focused, community oriented services is government policy in both Australia and New Zealand. In contrast, it is not possible to determine overall policy in the Pacific nations. Policy, planning and programme development in these countries is proceeding in a variety of ways.

Australia and New Zealand both have national mental health plans. In Australia, each of the states and territories have their own plans, which incorporate elements of the national plan and areas for service development relevant to their jurisdiction.

Australia developed its first national mental health plan in 1992. This plan promoted the integration of inpatient and community services into a cohesive mental health program. The second and third national mental health plans continued in this direction, but expanded the focus of reform to include additional activities, such as promotion and prevention, to complement development of the specialist mental health service system (11).

Australia has a set of national mental health standards and national practice standards for the mental health workforce. Other key reports include the national mental health and well-being surveys (7).

New Zealand developed its national mental health strategy "Looking forward" in 1992. Together with its revision in 1996, "Moving Forward", it formed the basis of the first national mental health plan. The second mental health plan (Te Tahuhu) was released in 2005 (12).

The Mental Health Commission (established in 1996 to ensure implementation of the national mental health plan and to act as an independent voice for service users and families) developed a national Blueprint for the funding of mental health services (13). Based on a recovery approach, it provided a practical framework for service development. As of 2009, the Blueprint has been 80% implemented and seen a 154% increase in the funding of mental health and addiction services.

New Zealand had a set of national mental health standards. These have now been incorporated in the national health and disability standards (14). Other key documents influencing the development of mental health and addiction services include those relating to primary mental health care, workforce development, a Maori mental health strategy (15) and a national information systems strategy (16).

A variety of programmes are offered in both countries addressing mental health promotion, anti-discrimination and destigmatization, prevention, psychiatric treatment, primary mental health care, recovery and service integration. Despite this, however, considerable unmet need still exists in both countries.

By contrast, while some Pacific Island nations have mental health policies and/or plans (such as the Solomon Islands, Samoa, Papua New Guinea, Guam and Kiribati), few have been resourced and governed in a way that is ensuring their implementation. This situation is, however, changing with the inception of the Pacific Islands Mental Health Network (PIMHnet), a joint initiative of the World Health Organization (WHO) Regional Office for the Western Pacific and the WHO Headquarters in Geneva. PIMHnet currently has 18 member countries.

Considerable progress has been made by PIMHnet member countries in identifying their mental health needs and resources, and in developing plans to address these needs. The PIMHnet's vision is "the people of Pacific Island countries enjoying the highest standards of mental health and well-being through access to effective, appropriate and quality mental health services and care". Its mission is "to facilitate and support cooperative and coordinated activities within and among member countries that contribute to sustainable national and sub-regional capacity in relation to mental health".

Twelve countries now have mental health human resource plans in place, designed to facilitate the development of human resources in ways that best meet the needs of individual countries. Furthermore, fourteen countries have a final draft of a mental health policy. The development of mental health policies provides a firm basis for gaining government commitment to the protection of the rights of people with mental illness and, where necessary, also provides a structure for new or updated mental health legislation.

PROGRESS TOWARDS ACHIEVING COMMUNITY-ORIENTED SERVICES

Priority has been given to the seriously mentally ill in the development of community mental health services in both Australia and New Zealand. At the same time, treatments for high prevalence disorders are receiving increasing emphasis through primary mental health care initiatives established over the past 5 years. Many would argue that there is a need for considerably more service based research. However, in both countries up to date reports on progress with the development of community oriented services have been carried out; in Australia by the Federal Government (11), and in New Zealand by the Mental Health Commission (17). There is also a considerable body of research, particularly in Australia, evaluating programs for people with a variety of conditions.

The proportion of state and territory mental health spending for community based services was 29% at the commencement of the Australian strategy, whereas it increased to 51% by 2005. By contrast, in New Zealand, 69% of mental health funding had been invested in community based services by 2007.

Despite the significant progress that has been made, there are still major problems, such as difficulty the public has accessing services (especially in both busy urban and rural areas) and disruptions to the continuity of care received by service users and their families (18,19). This is related to increasing problems with alcohol and drug consumption and its manifestation in comorbidity with mental disorders, the under-resourcing of services, a failure to provide sufficient and adequately coordinated training for the range of mental health workers now in the field, and insufficient attention given to integrating philosophies and models of care across the sector.

In Australia, criticism has been directed by some observers at health authorities, who have given increasing priority to funding hospital based care delivered through emergency departments and intensive acute and rehabilitation inpatient units (20). Similar concerns, relating to access and integration, have been raised about services in New Zealand. However, the intention to proceed in the development of community care has been recently expressed by the government of the latter country, through plans to shift the focus of some secondary mental health services to primary health care.

It is difficult to estimate the proportion of community mental health services in Pacific Island nations and it is questionable how meaningful it would be in any case, given the challenges of their current state of development. Mental illness is still not clearly discerned as such and resources dedicated to it are meagre at best. In addition, mental health initiatives do not readily attract sponsorship from private or corporate donors, particularly in view of the long-term commitment that is required.

In Australia and New Zealand, community based services are supported by acute inpatient services provided through general and private hospitals (the latter being insignificant in New Zealand). Care for people with longer term disorders is provided mainly in the community by public community mental health teams and NGOs. There are also inpatient rehabilitation and forensic services provided through the public sector in both countries.

An increasing and organized focus on high prevalence disorders has been taking place over the past two decades, with more attention and funding being given to the delivery of services through primary health care. Additional services for the treatment of people with mild-moderate disorders are occurring through the delivery of web-based programmes, mainly funded by government agencies.

The range of specialized programmes such as early psychosis, maternal mental health, peer support and alcohol and drug services are largely provided by community based agencies, including public and private mental health services and NGOs.

In Pacific nations, most mental health care is delivered by generally trained medical and nursing practitioners. However, many Pacific countries do not provide training in mental health/addiction and there is considerable stigma about mental illness (10). There is still a relatively restricted access to medication, both as a result of cost and limited laboratory facilities, as well as poor diagnosis.

PIMHnet has supported the building of infrastructures within individual countries, which may decrease reliance on external measures such as visiting clinicians. This includes the development of local training initiatives for primary health workers (including designing or adapting assessment tools for local use), and the provision of mentoring and support services within and between countries, using technological tools such as tele-health.

A recent review of PIMHnet concluded that "a very successful project has been implemented and the interventions so far have been implemented well, measured at this early stage primarily in outputs delivered. The achievements are significant given the short period of time that the project has been in place and the number of countries that are now benefiting" (21).

LESSONS LEARNED

In the Pacific nations, the challenges involve education about the recognition of mental illnesses and changing attitudes to them in terms of management. Beyond this, there are serious issues relating to the resourcing and prioritization of mental health services that affect the establishment of policy and plans for their development.

Lessons learned thus far relate to the importance of:

- National policies and plans to address the needs of those with serious mental illnesses based on models of community care.

- Educational efforts to increase the understanding of local people's knowledge of mental illness and what can be done to help their family members who have developed mental illnesses.
- Educational opportunities for general health professionals to gain and upskill their knowledge and practice in the recognition and treatment of mental illness.
- Making it possible for visiting specialist mental health professionals to provide consultation-liaison support for generally trained health professionals.
- Acknowledging and engaging the input of traditional healers and family members.
- Encouraging the development of mental health care pathways and referral systems.

Such initiatives need to be built on a collaborative basis from the "bottom-up" and to involve local people wherever possible. Only by doing so will Pacific nations have the opportunity to develop mental health services that are appropriate to their cultures, their needs and their aspirations. This approach is crucial in ensuring that the vision of PIMHnet is achieved.

In Australia and New Zealand, lessons learned relate to the recognition that the development of community oriented services is a long-term challenge and requires:

- A sustained incremental approach over decades to succeed.
- Bi-partisan political support for policy settings and commitment to sufficient funding to cover transition.
- Planning that is accompanied by costed, resourced, scheduled and well managed implementation plans allocating monies and roles to particular agencies and individuals.
- Mandated ongoing process of transparent consultation.
- Champions who can lead, inspire and drive the process.
- Involvement of service users, their families and other carers.
- Expertise and commitment to models of collaborative care.
- Understanding of community and processes necessary to engage community support.
- Broad based coalitions involving consumers, family members, NGOs, clinicians and administrators to guide and support the collaborative processes involved and ensure that the needs of service users and families are paramount.
- Financial expertise and wise stewardship.
- Protection of monies dedicated to mental health development (ring-fencing).
- Innovative solution focused strategies, expertise and adequate quality and quantify of personnel.
- Clearly defined care pathways and stakeholder engagement for them.
- Focusing on the provision of best practice while having the capacity to risk manage incidents and other threats to project implementation.

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Mental health consequences of the 2011 Fukushima nuclear disaster: are the grandchildren of people living in Hiroshima and Nagasaki during the drop of the atomic bomb more vulnerable?

On March 11, 2011 Japan was struck by a magnitude 9.0Mw earthquake. The results were severe, as more than 15,000 people were killed by the earthquake and the following tsunami (1). The aftermath of the disaster was a level 7 nuclear meltdown in Fukushima, matching only the Chernobyl disaster (1,2). The literature on behavioural reactions after nuclear disasters is scarce (3-5), mainly addressing anxiety. In the case of Japan, the nuclear disaster has awakened the memories of the World War II atomic bombs and as such, might have raised a historically based fear among Japanese (6). Our aim was to examine the differences between people whose grandparents were living in the greater area of Hiroshima and Nagasaki during the dropping of the atomic bombs and those whose grandparents were not.

A convenience sample of 140 Japanese was collected during the week of April 24, 2011. Each participant was initially screened by a Japanese interviewer for history of physical or mental disorders and substance abuse. Six participants were excluded from this survey because of positive history of the aforementioned conditions and 12 more participants had a significant number of missing data, leading to a final sample of 122 participants.

The participants (mean age 28.7±9.0 years, 64.2% women, 29.1% married) filled a short questionnaire collecting demographic data and asking a screening question: "were your grandparents exposed to the atomic bomb in Hiroshima or Nagasaki?" A "yes" answer led the interviewer to inquire if the grandparents were living in 1945 in the greater area of Hiroshima or Nagasaki when the atom bombs were dropped. We divided the sample into two groups: grandchildren of people who where in greater Hiroshima and Nagasaki during World War II (n=34) and a comparison group (n=88). Each participant was administered a battery of self-reported questionnaires, including questions about fear of radiation exposure, rated on a four Likert scale ranging from 1 (not at all) to 4 (very much).

Post-traumatic stress disorder (PTSD) symptoms were assessed by the 22-item Impact of Event Scale – Revised (IES-R) (7). This scale was rated from 0 (not at all) to 4 (extremely) and represents the participants' distress in the following week regarding the Fukushima disaster. This measure was used before and was found to be suitable in other major disasters such as the 2010 Haiti's earthquake (8).

Grandchildren of Japanese living in Hiroshima and Nagasaki showed higher fear of radiation exposure (mean 3.0±0.9 vs. 2.7±0.8; t=2.131; p=0.035), and higher level of PTSD symptoms (mean 32.8±21.6 vs. 23.0±15.4; t=2.755; p=0.007). There were no significant differences between the groups in age, gender, marital status and distance from Fukushima.

These findings may indicate the existence of a sub-group among the Japanese population who shows a specific vulnerability to PTSD and fear of radiation exposure. Although the sample size was small and the design cross-sectional, this study may be of interest, because this is the first time that a nuclear disaster occurs in a country with prior exposure.

This study may encourage future longitudinal investigations focusing on the long-term psychological and psychiatric sequelae of nuclear disaster (1,3-5).

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Proportion of crimes attributable to mental disorders in the Netherlands population

The proportion of crimes attributable to mental disorders in the population (population attributable risk, PAR) is estimated to be 5.2% for violent crimes and 15.7% for arson (1). However, only a minority of crimes committed by mentally ill defendants is directly attributable to the underlying mental disorder (2). The relationship between crime and mental disorders is confounded by socioeconomic status, previous institutionalization, coexisting substance abuse, and personality disorders (3). We had the unique opportunity to examine the PAR for crime fully attributable to mental illness, as accountability for indicted crimes is routinely assessed in pre-trial reported defendants in the Netherlands (4). A severe psychiatric disorder, usually of psychotic nature, is a necessary condition for a finding of "not accountable" and absolves a person of guilt. The total number of crimes and defendants between 2000 and 2006 was obtained from the national Dutch registry. The PAR of crimes fully attributable to mental disorders was calculated as the fraction of persons deemed "not accountable" out of the total number of defendants.

From the 21,130 pre-trial psychiatric reports in the Netherlands made between January 1, 2000 and December 31, 2006 (1.5% of the total of 1,403,107 defendants), 1,002 defendants were considered unaccountable, amounting to a PAR for all crimes of 0.07%. The PARs for arson (0.57%), rape and other sex-related crimes (0.24%) and violent crimes (0.16%) were higher, whereas the PARs for burglary/theft (0.02%), drug-related crimes (0.002%) and fraud/deception (0.001%) were lower. Of the "not accountable" defendants, 894 persons (89.2%) had a psychotic disorder, 51 persons (5.1%) had an affective disorder, 38 persons (3.8%) had a psycho-organic syndrome and 27 persons (2.7%) had an IQ lower than 71. Comparable to other studies, the overall prevalence of psychotic disorders was 12.5% (2,5).

In conclusion, we found that the PAR of crimes directly attributable to mental disorders is very small (0.07%), although not absent. Our findings are at odds with earlier described PARs of 5.2% for violent crimes and 15.7% for arson (1), as we examined only crimes fully and directly attributable to mental illness. As there are multiple confounders of the relationship between crime and mental disorders (2,3), we think this is a more accurate reflection of the proportion of crimes attributable to mental disorders.

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Are there differences between training curricula on paper and in practice? Views of European trainees

Despite the directives of the European Union of Medical Specialties (1) and reforms of training curricula on paper, recent publications still demonstrate significant differences in content and quality of training curricula across Europe (2-6). The harmonization and improvement of psychiatric training in Europe is the most important objective of the European Federation of Psychiatric Trainees' (EFPT), a non-governmental organization representing national associations of trainees of more than 30 countries.

The EFPT conducted a survey among European psychiatric trainees to assess problems in the implementation of psychiatric training curricula and the quality control mechanisms of training available in European countries. Representatives from 29 EFPT member countries filled in a country report survey form. They were asked to rate the differences between the psychiatric curriculum on paper and the curriculum in practice in their countries as significant, existing to some extent or not existing. They were also asked to explain their understanding of such discrepancies in open ended questions.

In 13 countries (45%), trainee representatives reported some differences between the psychiatric curriculum on paper and curriculum in practice, and in nine countries (31%) significant differences were reported. In only seven (24%) countries the curriculum was in line with training conditions in practice. The most problematic placements were psychotherapy (n=13), research (n=12) and addictions (n=5).

A number of reasons were given by trainees for the discrepancies between the curriculum and its implementation. The most commonly reported reasons were the lack of time for teaching activities (n=11), the lack of appropriate rewards for trainers (n=9), the lack of quality control measures (n=9), and a general shortage of supervisors (n=7).

In 6 out of 29 countries (21%), no audits of psychiatry training programmes of any kind are performed. For one country, data are not available. In the remaining 22 countries, the main quality control mechanisms consist of commissioned questionnaire reviews of placements, trainers/supervisors and working conditions. These are directed at trainees, supervisors or training providers (heads of departments or hospital directors).

Interestingly, in countries where training was reported to be in line with the curriculum, regular audit of training programmes existed more frequently (6 out of 7 countries, compared with only 8 out of 22 countries where significant differences between curriculum on paper and in practice were reported).

These results are in line with those of previous surveys (2-4), demonstrating that several problems still influence the correct implementation of training curricula in practice. They also emphasize the importance of establishing adequate quality control mechanisms for all national training programs as one of the crucial steps in the improvement and harmonization of psychiatric training in Europe.

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WPA contribution to the development of the chapter on mental disorders of the ICD-11

The WPA is supporting the World Health Organization (WHO) in the process of development of the chapter on mental disorders of the 11th edition of the International Classification of Diseases (ICD).

The WPA Past-President, M. Maj, is a member of the International Advisory Group for the ICD-10 Revision and the chairperson of the Working Group on Mood and Anxiety Disorders. Several WPA officers or experts have been appointed as chairpersons or members of ICD-11 Working Groups. The chairpersons include W. Gaebel (Working Group on Psychotic Disorders), P. Tyrer (Working Group on Personality Disorders), L. Salvador-Carulla (Working Group on Intellectual Disabilities), O. Gureje (Working Group on Somatic Distress and Dissociative Disorders), and D. Stein (Working Group on Obsessive-Compulsive and Related Disorders).

WPA Member Societies have participated in the WPA/WHO Global Survey of Psychiatrists' Attitudes Towards Mental Disorders Classification (1), whose results are significantly influencing the revision process. Several WPA Member Societies and experts are being or will be involved in ICD-11 field trials and in the various translations/adaptations of the diagnostic system. The WPA is actively contributing to the process of harmonization between the ICD-11 and the DSM-5.

World Psychiatry is one of the main channels through which the international psychiatric community is following the ICD-11 development. A special article authored by the ICD-11 International Advisory Group, summarizing the philosophy of the entire process, has been published in the journal (2), as well as the first report of the Working Group on Intellectual Disabilities (3), and many papers relevant to the ICD-11 development (4-30). Several papers produced by the Working Group on Mood and Anxiety Disorders will be collected in a special supplement to the journal. The production of further supplements is planned. All the above articles are or will be available on the WPA website (www.wpanet.org).

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