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The impending globalization of ADHD: Notes on the expansion and growth of a medicalized disorder

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ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) has been medicalized in the United States since the 1960s. Primarily used in North America until the 1990s, ADHD diagnosis and treatment have increasingly been applied internationally. After documenting the expansion of ADHD in a global context, this paper presents five brief international examples examining ADHD usage and expansion: the United Kingdom, Germany, France, Italy and Brazil. We then identify and describe several vehicles that facilitate the migration of the ADHD diagnosis: the transnational pharmaceutical industry; the influence of western psychiatry; moving from ICD to DSM diagnostic criteria; the role of the Internet including the related advent of easily accessible online screening checklists; and advocacy groups. Finally, we discuss what this globalization of a diagnosis reflects about the potential global medicalization of other conditions.

Attention Deficit Hyperactivity Disorder (ADHD) is a classic example in the study of medicalization. The first sociological study of the medicalization of deviance focused on hyperactive children (Conrad, 1975, 1976) and a key paper the rise of Adult ADHD is an exemplar of how diagnostic expansion contributes to the growth of medicalization (Conrad and Potter, 2000). While in recent years there have been important writings on the changes in medicalization (Clarke et al., 2003, 2010; Conrad, 2005; Conrad, 2007), these have mostly focused on the American context. But in the past two decades it has become apparent that medicalization is becoming an increasingly global phenomena and that this globalization is a significant change that needed sociological attention. Thus there is a gap in the sociological literature on how a medicalized diagnosis is able to migrate from the U.S. to other countries. In line with previous studies we focus on ADHD as an exemplary case of medicalization, in this instance by examining the reception of ADHD in several countries, to provide fresh insights into impending globalized medicalization.

For the past forty years, ADHD has been among the most commonly diagnosed psychiatric conditions for children in the U.S. (Conrad, 1975; Kessler et al., 2006). With the rise of Adult ADHD the prevalence of ADHD continues to grow as it becomes seen as more of a lifespan condition than just a disorder for children. Recent studies suggest that up to 9% of U.S. children ages 4–17, and approximately 4.4% of U.S. adults have ADHD (Kessler et al., 2006). Until two decades ago, the ADHD diagnosis was primarily used in North America and a few other countries (e.g. Australia and Canada.) (Mayes et al., 2009; Conrad, 2010). Growing evidence suggests that this is changing and that ADHD is now diagnosed in various countries across the globe (Polanczyk et al., 2007).

Analysts of medicalization see the forces behind medicalization as changing. Conrad (2005) has suggested that the engines of medicalization are shifting from the medical profession and social movements to biotechnology (e.g. the drug industry), consumers, and the insurance industry – with medical professionals increasingly taking more of a secondary role as gatekeepers. In a different frame, Clarke et al. (2003) suggest there is a greater impact of technoscience in what they call "biomedicalization." Both agree that medicalization is expanding and changing. Increased usage of pharmaceutical and drug interventions for various human issues, what Abraham (2010) and others refer to as the "pharmaceuticalization" of medicine, may also contribute to increased medicalization (Conrad, 2013).

One other important way medicalization is changing is that it is becoming more global. While most of the analysis of medicalization thus far has been limited to the U.S., there is a paucity of research examining how medicalization may be expanding in the

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international sphere. In this paper we explore how one example of a medicalized category, ADHD, has expanded beyond the U.S. More specifically, we examine how ADHD diagnosis and treatment have migrated from the U.S. to be used more globally. While this is not the same as the diagnostic expansion from children to adults (Conrad and Potter, 2000) and now to toddlers (Schwarz, 2014), it expands and extends the diagnostic application to different parts of the world. We first document the expansion of ADHD in a global context, present several specific examples, and then suggest vehicles by which this migration may be occurring. Finally, we discuss what this case of globalization of diagnosis and treatment reflects about the potential global medicalization of other conditions.

1. Evidence for the globalization of ADHD

There is little evidence about ADHD diagnosis and treatment in countries other than the U.S. until roughly the 1990s. Indeed, some have suggested that ADHD might be a "culture bound syndrome" limited to the U.S. or English-speaking countries (Anderson, 1996; Canino and Alegria, 2008). What evidence does exist suggests lower diagnostic rates beyond the U.S. For example, research around the 1990s estimated that <1% of children in the U.K. and approximately 4% of children in Italy were diagnosed with ADHD, compared to an estimated 7–9% of children in regions in the U.S. (Camerini et al., 1996; Gallucci et al., 1993; Hinshaw, 1994; Prendergast et al., 1988). European perspectives on hyperactivity and ADHD differed significantly through the early 1990s, with lower prevalence associated with European perspectives (Sargeant and Steinhausen, 1992). There is also evidence that until the 1990s, the U.S. consumed about 90% of all the Ritalin (methylphenidate) produced, the signature psychoactive treatment for ADHD (Diller, 1997). As other countries adopted the treatment, this dropped to 75% by 2010 (Hinshaw and Scheffler, 2014: 126).

Several studies point to the spread of ADHD diagnosis and treatment beyond North America. Polanczyk et al. (2007) conducted a meta-analysis of 102 studies and calculated an estimated worldwide prevalence of 5.29%. While there is a wide range in the quality of the studies examined, and in the precision of the location-specific estimates underlying their analysis, Polanczyk et al.'s (2007) findings indicate that ADHD, and similar diagnoses, are being diagnosed in a large number of countries. Skounti et al. (2007) reviewed 39 studies[1] conducted in various countries around the globe and described prevalence estimates ranging from 2.2 to 17.8%. Most of the studies indicated a prevalence of between 4 and 10%.

Drawing upon data from a cross-national workshop and survey, Hinshaw et al. (2011) describe diagnosis and treatment for ADHD in a number of countries for which ADHD research is increasingly available: Australia, Brazil, Canada, China, Germany, Israel, the Netherlands, Norway and the United Kingdom. The authors note that these countries have experienced large increases in ADHD medication usage and they describe social context factors that can shape service delivery. Timimi and Maitra (2009) discuss ADHD in global perspective – describing how diagnoses such as ADHD are being adopted into many Western and non-Western countries, and warning of problems associated with using a "uniform 'one-size-fits-all' approach to theory and practice."

Utilizing IMS Health data from 1993 to 2003, Scheffler et al. (2007) estimated the growth of ADHD worldwide by measuring changes in the global use of ADHD medications, a rough proxy for diagnosis. They found that the use of ADHD medications rose 3-fold concomitant with a 9-fold increase in global spending. While they found higher than predicted use for the U.S., Canada and Australia, increases in other parts of the world were also observed (e.g. the Netherlands, New Zealand, Mexico, and Turkey). The largest market remained the U.S., with an 83–90% share, but the number of countries using ADHD medications grew from 31 to 55 over the decade. The volume of ADHD medications also increased globally by 274%, averaging 13.2% per year, with Iceland now having the highest prescription rate of methylphenidate in the world (Einersdottir, 2008). As another indicator of increasing international interest in ADHD, we examined the locations of all 39 ADHD prevalence studies published in medical journals from 1992 to 2006 and found that while the U.S. dominated with 14, the other 25 studies were located in 20 countries throughout the world (see Table 1, constructed from Skounti et al., 2007).

Faraone et al. (2003) reviewed available international studies and contended that the difference in the prevalence of ADHD reflects variation in the definition of the condition as opposed to any real differences in behavior. They argue for the universal acceptance of the APA's (1994) *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition*, (DSM-IV) criteria for diagnosing ADHD and conclude that by using DSM criteria, the prevalence of ADHD is "at least as high in many non-U.S. children as in US-children" (Faraone et al., 2003: 104) "[with] no convincing difference between the prevalence of this disorder in the USA and most other countries or cultures" (111). They claim, for example, that ADHD rates of 1.4% in Russia and 1.3% in the U.K., considerably lower than U.S. rates, would range from 3.7% to 8.9% if the same method and criteria were used. Polanczyk et al. (2007) and others make similar arguments, suggesting that prevalence variation across geographic areas is due predominantly to variation in methodologies of prevalence studies. Such heterogeneity in practice, however, is precisely the sociological point; countries often do *not* use the same diagnostic criteria and that *is* a key difference. In a recent large European Union study, the authors' "best estimate" is that the European prevalence of ADHD among 6–17 year-olds is 5% (Wittchen et al., 2011).

While global data remain sparse, what data exist suggest a rising global prevalence of the diagnosis of ADHD and an increase in consumption of ADHD medications in a wide range of countries (See also Hinshaw et al., 2011). What is less evident, however, is how ADHD diagnosis and treatment are migrating to different regions of the globe. More specifically, what vehicles underlie the globalization of ADHD?

2. Case examples

In this section we present five brief sketches of countries where ADHD diagnosis and treatment have grown in roughly the past fifteen years. These countries include the United Kingdom, Germany, France, Italy and Brazil. We chose these countries because

Table 1
Location of ADHD prevalence studies in medical journals, 1992–2006.[a]

United States	14
Europe	11
Asia	4
Canada, Australia, New Zealand	3
Mideast	3
South America	3
Other	1

[a] All studies used DSM-IIIR or DSM-IV criteria.
Source: Skounti et al., 2007

[1] The following countries were explored: Australia, Brazil, Canada, Colombia, England, Finland, Germany, Greece, Iceland, Israel, Italy, Japan, Netherlands, New Zealand, Qatar, Spain, Sweden, Taiwan, Thailand, Turkey, the United States, and Venezuela.

there was published research related to ADHD available for each, a review of that literature suggested that each of these countries experienced some change in ADHD diagnosis and treatment, and the cases present somewhat different experiences related to ADHD. For some countries we also supplemented this with key informants. While this is clearly an opportunity sample, together they can shed light on wider changes in ADHD diagnosis and treatment.

Overall ADHD diagnosis and treatment appear to be increasing in the countries we explored. We briefly describe the ADHD growth for each and identify specific differences among the selected cases. We then use these examples to point to vehicles for the globalization of ADHD. Owing to a paucity of systematic data on ADHD prevalence and migration in general and to a degree in our case countries as well, we are limited to using the best data available. Thus we rely on what data are available to reflect changes in the identification and treatment of ADHD: data on increases in diagnosis; on changes in prescription of medications; increases in prevalence, or some combination of these. We recognize that there are differences among these measures, but together they give use the best picture currently available on the changes in ADHD.

2.1. The United Kingdom

The case of ADHD in the U.K. points to the role different diagnostic criteria can play in shaping ADHD prevalence. The WHO's *International Classification of Mental and Behavioral Disorders* (ICD) was generally adopted in the U.K. after its release as the ICD-9 in 1979 and the ICD-10 in 1998. The ICD denotes a condition called hyperkinetic disorder (HKD), which provides a higher threshold to achieve a diagnosis than the DSM (see section below comparing ICD and DSM diagnostic criteria for details). Mostly severe or extreme symptomology is classified as a disorder under the ICD (NICE, 2009), denoting a less prevalent and more severe condition than the DSM (Thapar et al., 1999). According to the National Institute for Health and Clinical Excellence (NICE, 2009), HKD thus refers to a "severe sub-group of the DSM-IV-TR combined subtype of ADHD." The prevailing use of the ICD criteria may account for the historically lower rates of ADHD in the U.K. than in the U.S. Research suggests that <1% of U.K. children were diagnosed with ADHD in the 1990s (Hinshaw, 1994; Prendergast et al., 1988; Taylor, 1994) and it was more difficult to receive an ADHD diagnosis in the U.K. than in the U.S. (Malacrida, 2003). Holowenko and Pashute (2000) suggest that use of ICD criteria likely under-represents the prevalence of ADHD in the U.K. population.

ADHD is now, however, the most prevalent behavioral disorder in the U.K. with an estimated 2–5% of school-aged children and young people having the condition (http://www.nhs.uk/conditions/attention-deficit-hyperactivity-disorder/Pages/Introduction.aspx). Stimulant-treatment for ADHD has also been on the rise since the 1990s (e.g. Bramble, 2003; Goldman et al., 1998; Orford, 1998; Robison et al., 1999), with an estimated increase from 183,000 prescriptions in 1991 to 1.58 million in 1995 (Parliamentary Office of Science and Technology, 1997). NICE (2009) notes a large rise in ADHD recognition and treatment, with approximately 0.5 per 1000 children diagnosed 30 years ago (Taylor, 1986), and 3 per 1000 receiving medication for ADHD in the late 1990s (NICE, 2006). The U.K. Department of Health estimates a 35-fold increase in Ritalin prescriptions between 1992 and 1997 and recent research suggests ADHD prescriptions approximately doubled from 2003 to 2008 for children, adolescents, and adults ages 45 years or older; results indicated an approximate 4-fold increase for adults 18–24 and 24–45 years old (McCarthy et al., 2012). Moreover, child psychiatrists in the early 2000s were twice as likely to use methylphenidate as a treatment option for ADHD, than in the mid 1990s (Bramble, 2003). A recent Care Quality Commission (2013) report suggests that methylphenidate prescriptions rose by 11% in primary care practices, and by 24% in private practices from 2011 to 2012, suggesting both increased ADHD diagnosis and treatment in the U.K.

Changes in diagnostic practice, with greater use of the DSM criteria, may contribute to these observed increases. Based on the ICD-10's narrower criteria, the prevalence of HKD is estimated to be between 1 and 2% of children and young people in the U.K. (Green et al., 2005; NICE, 2008). Using the broader DSM-IV criteria, ADHD prevalence in school-aged children and adolescents is estimated to be between 3 and 9% (NICE, 2008). NICE (2008) notes that the terminology in Europe has changed and 'ADHD' has become the diagnostic term most often used in clinical practice, even if more restrictive criteria are utilized. It is also important to note that, similar to the U.S., both specialists and general practitioners in the U.K. may prescribe and monitor treatment for ADHD (Frances et al., 2004). As discussed in more detail below, this is not the case for countries such as France and Italy, where specialists perform such tasks (Debroise, 2004; Panei et al., 2008).

2.2. Germany

When discussing ADHD in Germany the conversation often begins with the description of "Fidgety Phillip," an overactive "naughty boy" in the 1845 children's book by Heinrich Hoffman (Smith, 2010). In 1932 Franz Kramer and Hans Pollnow described behaviors in children that are similar to ADHD when they described Kramer–Pollnow Syndrome – a neurological disorder with hyperactivity and mental retardation. Their research did not, however, engender widespread diagnoses and treatment (Neumarker, 2005). There was some attention to the motor – as opposed to the attention – side of children's behavior problems in Germany, but there is no evidence of any connection to Bradley's 1937 discovery about the 'paradoxical effect' of stimulants on children's behavior problems which so influenced ADHD research (Conrad, 1975). While there was some interest in the concept of 'minimal brain dysfunction' (a diagnostic precursor to ADHD) in Central Europe in the 1950s, it is unclear how widely used the diagnosis was (Fegert, personal communication, 2011).

The development of the ICD-9 criteria (1979–98) for "hyperkinetic disorder', generally adopted in Germany, presented European guidelines for diagnosing a hyperactive behavior disorder. In the 1980s, Ritalin was prescribed to many who were diagnosed with HKD in Germany, although insurance-covered behavioral training programs (e.g., "Ergotherapie," or Occupational Therapy) were also utilized. Some concern arose amongst parents and even some psychiatrists about the impact of 'labelling' children with a mental disorder, and there was a relatively critical public debate over the use of medications for these children (Fegert, personal communication, 2011).

Research suggests that an increase in diagnosis and prescription rates occurred in the 1990s (Ferber et al., 2001, 2003; Schubert et al., 2001). Drug reports suggest that from 1997, the volume of methylphenidate prescriptions increased approximately 10-fold; moreover, between 1999 and 2008, prescriptions for drugs to treat ADHD rose from 10 million defined daily doses to 53 million defined daily doses (Lohse et al., 2008; Lohse and Muller-Oerlinghausen, 2009). Up until the 1990s amphetamines played no role in Germany, as there were no approved formulations for children. Now, however, with federal drug agency (Das Bundesinstitut fur Arzneimittel und Medizinprodukte) approval, and the availability and promotion of slow release compounds, treatment numbers have continued to rise (Fegert, personal communication, 2011). Consistent with European guidelines, the German Society for Child and Adolescent Psychiatry and Psychotherapy recommends

stimulant and behavioral interventions as part of a multimodal treatment approach (Dopfner et al., 2000; Overmeyer and Ebert, 1999; Taylor et al., 1998). ADHD prevalence also began to rise, in part responding to increased drug industry marketing and an increasing exchange of mental health experts between the U.S. and Europe. A study of one German state showed a 45% increase in the prevalence of ADHD between 2000 and 2007, although the percentage among individuals of ages 0–18 years was still only 2.21%; methylphenidate use was approximately 1% (Schubert et al., 2010). In another broader survey of German health (KiGGS), Huss et al. (2008) estimated the overall lifetime prevalence of ADHD diagnosis for children and adolescents to be 4.8% in Germany.

Several other factors may have led to an increase in ADHD diagnosis and treatment in Germany, and require further study. For example, Eli Lilly and other companies began sponsoring a speaker's bureau, meetings, parent's organizations, and other promotional efforts in Germany by the early 1990s (Fegert, personal communication, 2011). After a long debate between pediatricians and child psychiatrists, a consensus paper (see discussion below) emerged which allowed use of the DSM-IV criteria instead of the ICD-10, but apparently only for ADHD. ADHD research and talks at European scientific conferences also may have shaped practices around ADHD in Germany (http://www.adhdfederation.org/congress2013/congresshistory.html).

2.3. France

There is limited epidemiologic data regarding ADHD in France. Lecendreux et al. (2010) note that, prior to their own finding of 3.5–5.6%, ADHD prevalence in youth had not been examined in France. Research suggests that approximately 0.18% of French children take ADHD medications – versus 4–6%, for example, in the U.S. (Knellwolf et al., 2008; Robison et al., 2004; Winterstein et al., 2008) and 7.3% of French adults are diagnosed with ADHD (Fayyad et al., 2007). Recent studies also suggest an increase, albeit small, in the percentage (from 0.02% to 0.18%) of French children 6–18 years old who received pharmacologic treatment for ADHD between 1997 and 2005 (Frances et al., 2004; Debroise, 2004; Knellwolf et al., 2008).

ADHD's history in France appears to be shaped in large part by clinicians' preference for using the more restrictive *French Classification of Child and Adolescent Mental Disorders* (CFTMEA) or the ICD (Mises et al., 2002; Sechter, 1995) diagnostic approaches when examining symptoms related to hyperactivity (See Vallee, 2009, who first outlined some of this material, for more details.). Almost three decades ago Pichot et al. (1983) found that only 12% of French psychiatry professors utilized the DSM-III regularly in contrast to the more widely utilized ICD and French classification systems. Over a decade later, Sechter (1995) found that while >90% of French psychiatrists owned the DSM-IIIR, they used it irregularly, and predominantly for research purposes; 65% of French psychiatrists considered it unhelpful in the diagnostic process (Sechter, 1995). Mises et al. (2002) argue that the CFTMEA is the current "classification of reference for French child psychiatrists, who appear to be comfortable with it because it fits their diagnostic and therapeutic work."

A task force of the Federation Francaise de Psychiatrie developed the CFTMEA in 1983 in direct response to the release and growing influence of the DSM (then in its 3rd edition) (Mises et al., 2002). Drawing upon phenomenological and psychoanalytic perspectives, the CFTMEA was developed as an alternative nosography – one that was grounded in psychopathological and developmental approaches that aligned with French psychiatry (Squillante, 2014). The classification scheme's wide usage in France (Mises, 2012) is consistent with a psychopathological tradition, supporting broad assessments of disorders, and the establishment, when possible, of a structural diagnosis situated in psychodynamic psychopathology (Mises et al., 2002). French clinicians tend to perceive ADHD as a psycho-affective disorder, and favor psycho-social interventions – focusing less on the enumeration of symptoms and more on their meaning and their connection to a child's social context, and overall psychological functioning (Lafortune and Meilleur, 2014; Mises et al.,, 2002; Vallee, 2011). Psychostimulants are used as part of a comprehensive, multi-modal treatment when other approaches (e.g. educational and psychosocial) are insufficient alone (Agence Nationale de Securite du Medicament et des Produits de Sante, 2013; Bursztejn and Golse, 2006; Golse, 2004; Le Heuzey et al., 2006).

Regulatory policies regarding ADHD treatment have also shaped ADHD's history in France. Psychostimulants were approved over a decade after the U.S. (1975 vs. 1961), far fewer were approved (2 vs. 10), and strict controls were imposed (Knellwolf et al., 2008; Frances et al., 2004; Vallee, 2009). Only medical specialists could prescribe medication, from 3 authorized hospital pharmacies (all located in metropolitan areas) and only a week's supply could be granted (Debroise, 2004; Frances et al., 2004). Furthermore, in 1985, Ciba-Geigy allowed their license renewal to expire, essentially removing Ritalin from the French market (Debroise, 2004). Faced with strong public disapproval of Ritalin and low sales, Ciba-Geigy may have feared negative public relations associated with marketing the drug to children, and chose to distance itself from the product (Vallee, 2009).

The case of ADHD in France points in large part to diagnostic and treatment-related practices that are grounded in a strong psychopathological and psychoanalytic tradition. Many French clinicians prefer the more restrictive criteria presented in the CFTMEA or the ICD, and tend to choose psychosocial over pharmacologic interventions for ADHD. This dynamic may, however, be changing. For example, some medical specialists kept prescribing Ritalin after 1985 – even encouraging parents to obtain medications for their children outside of France (Debroise, 2004; Vallee, 2009). Some specialists also urged Novartis (previously Ciba-Geigy) to reinstate Ritalin. It was later reapproved in 1995 and some of the controls relaxed (Chambry, 2006). For example, general practitioners may now provide 28-day prescriptions, and for up to a year at a time (Knellwolf et al., 2008; Vallee, 2009). In 2004, Concerta was also added to the French market (Knellwolf et al., 2008). Such changes may contribute toward the aforementioned small increase in the percentage of French children 6–18 years old who received pharmacologic treatment for ADHD between 1997 and 2005 (Frances et al., 2004; Debroise, 2004; Knellwolf et al., 2008).

2.4. Italy

Guareschi-Cazzullo and Mazzini-Tomazzolli (1971) are often credited with providing the first nosologic validity to something resembling an ADHD diagnosis in Italy when they described behavioral problems associated with hyperactivity as 'hyperkinetic syndrome.' Little other attention was given to ADHD, or "Disturbi di Attenzione/Iperattivita", in the Italian medical and epidemiologic literature until the 1990s (Bonati, 2005; Clavenna et al., 2007). The few existing studies estimate prevalence in school-aged children and adolescents to be <1–4% (Besoli and Venier, 2003; Camerini et al., 1996; Corbo et al., 2003; Gallucci et al., 1993; Marzocchi and Cornoldi, 2000; Swanson et al., 1998), with more recent estimates of 7% (Mugnaini et al., 2006) and 3% (Bianchini et al., 2013) among school-aged children.

The ADHD diagnosis has not been as widely adopted in Italy as it has been in countries such as the U.S. In the 1980s O'Leary et al. (1984, 1985) found differences in Italian and American

psychologists' and psychiatrists' assessments of behaviors characteristic of ADHD. Italian professionals tended to diagnose 'learning disability' or 'personality disorder' where Americans denoted 'behavioral disorder' or 'hyperactivity' (Frazzetto et al., 2007). Until recently, many Italian clinicians had limited knowledge of ADHD as it is defined in the DSM and ICD – utilizing instead a predominantly psychodynamic–psychoanalytic approach and tending to use a fairly generic label of "problem child" or "developmental difficulties" (Bonati, 2005; Gallucci et al., 1993). In a 2001 study, approximately 60% of the primary care pediatricians were cognizant that ADHD existed but were unfamiliar with how to diagnose it; only 10% were following up ADHD cases directly (Bonati et al., 2001b; Marchini et al., 2000).

ADHD's history in Italy is intricately tied to that of Ritalin (methylphenidate). Ritalin first appeared on the Italian market in the late 1950s (similar to many other European countries). However, limited use of the ADHD diagnosis, preferences for less organic or drug-based psychiatry, and strict drug policies contributed to low clinical use of pharmacotherapy. Ritalin was restricted in 1989, due to increased illegal use among college students (Frazzetto et al., 2007) and Ciba-Geigy removed it from the market (Bonati, 2005; Panei et al., 2008). For well over a decade it was illegal to obtain.

This has since changed, due in large part to the efforts of patient and provider organizations (e.g. the Associazione Italiana Famiglie (AIFA) (www.aifaonlis.it) and the Italian Association of Paediatricians) that worked to raise awareness about ADHD and lobby for methylphenidate's reintroduction into the Italian market (Bonati et al., 2001a; Bonati, 2005; Frazzetto et al., 2007). Such efforts garnered further support in 2002 when the Societa' Italiana di Neuropsichiatria dell'Infanzia e dell' Adolescenza (SINPIA) published national guidelines for child and adolescent neuropsychiatry (see www.aifa.it/documenti/LGAdhdSINPIA02-doc), in an effort to synthesize and adapt existing ADHD research to the Italian context (Panei et al., 2008). The publication aligned with the American Academy of Pediatrics' international guidelines, introduced in 2000 and 2001, and was intended to facilitate systematic and rigorous diagnosis in Italy (Frazetto et al., 2007). A National Consensus Conference also formed, producing a statement that accepted and brought recognition to ADHD as a pathology of childhood, explained the diagnostic process, and justified pharmacotherapy as a possible treatment option (Maturo, 2012 personal communication; Zuddas and Bonati, 2003; Frazzetto et al., 2007).

In 2002, Italy's Drug Agency shifted methylphenidate to the less restrictive list of drugs (Bonati, 2005), and recognized it as a possible treatment option for children ≥6 years old. Ritalin and Strattera became available in 2007 (Panei et al., 2008) – the same year that a national drug registry was formed to collect and monitor diagnostic and management data on individuals receiving pharmacological treatment (Gazzetta Ufficiale, 2003; Bonati, 2005; Frazzetto et al., 2007). This registry determines the risk/benefit ratio of ADHD drugs and their safety in clinical practice (Germinario et al., 2013).

Pharmacologic treatment in Italy is not, however, the norm, and prescription rates for mental disorders are relatively low (Clavenna et al., 2007). Research suggests that five times as many children receive psychotherapeutic interventions as pharmacologic interventions (Agency for Public Health, 2002) and 0.80% of individuals with ADHD are treated pharmacologically, compared to 57%, 11%, and 9% in the U.S., U.K., and France, respectively (Panei et al., 2008). Italy's lower rates have been attributed to the country's stricter treatment plans and the introduction of the National Register (Panei et al., 2008). The data also suggest a downward trend in psychotropic drug consumption in children from 2001 to 2006.

ADHD diagnosis and treatment therefore occur in Italy, though the country's history of ADHD points to a critical psychiatry legacy (Basaglia, 1982) coupled with a more psycho-dynamic orientation and a history of strong drug regulations. Several advocacy groups have also taken critical stances toward pharmacologic treatment for ADHD, such as the Associazione Italiana Disturbi di Attenzione/Iperattivita (AIDAI) (www.aidai.org) (Bonati, 2005).

2.5. Brazil

As in many South American countries, ADHD is called TDAH (Transtorno do deficit de attencao/hyperatividade) in Brazil. While published articles on ADHD in Brazil can be traced back as far as the early 1990s, acceptance of the notion of ADHD as a biomedical condition and the idea of medications as a primary treatment option has been slow (Hinshaw et al., 2011). Hinshaw et al. (2011) suggest that a strong clinical preference for psychoanalysis, and a dominant preference for "constructivism" in the education system, may contribute to a disinclination toward biomedical perspectives and medications in Brazil. Behavioral problems in Brazil tend not to be considered to be associated with clinical manifestations of disorders or syndromes (Hinshaw et al., 2011). Brazil's period as a military dictatorship also led to discourse regarding connections between medical treatment for behavioral problems and political depression, which may have contributed further toward a disinclination toward biomedical views and treatments related to ADHD (Hinshaw et al., 2011).

By the beginning of the 21st century, however, Brazil was home to several internationally-known ADHD researchers (e.g. Guilhermo Polanczyk and Luis Augusto Rohde). ADHD is now considered a highly prevalent disorder in Brazil and interest in the diagnosis has been growing dramatically in past decades (De Souza et al., 2008). Estimates of prevalence range from 0.9 to >6%, depending on the diagnostic criteria and the population studied. As one prominent researcher pointed out, there is a scarcity of studies using DSM-IV criteria (often considered the new diagnostic gold standard) in cultures from developing countries (Rohde, 2002). But there is no doubt there is "growing salience of DSM-IV derived categories" in Brazil (Behague, 2009, 461). This includes a 2004 study using DSM-IV criteria which found a prevalence of 4% in children (Goodman et al., 2005). ADHD is also increasingly seen as a lifelong disorder in Brazil; a recent household study of adults using a self-report screen reported a prevalence of 5.8% (Polanczyk et al., 2010).

As in developed countries, many children are identified in school by potential "sickness brokers for ADHD" (Phillips, 2006). A large scale Brazilian study showed that teacher suspicions of ADHD were important in identification (Ponde & Freire., 2007). A recent study revealed heterogeneous beliefs regarding ADHD among many Brazilian professionals including teachers – beliefs which were not based on scientific evidence; the authors noted that "it is urgent that these professional groups be trained and the information programs on ADHD be established for parents and schools" (Gomes et al., 2007). As in other countries, the first line of treatment for ADHD tends now to be stimulant medications (http://www.psiqweb.med.br/site/?area=NO/LerNoticia&idNoticia=277) though there has been some concern in Brazil around both under (Hinshaw et al., 2011) and overtreatment with such medications (Ortega et al., 2010).

There are a number of active groups promoting ADHD in Brazil, including a well-established information and advocacy website Associacio Brasil DTA (www.tdah.org.br), which is connected with kindred American groups. Ortega et al. (2010) notes that the media, especially large circulation newspapers, has a significant impact on disseminating information about ADHD. There has, however, been

some organized resistance to increased ADHD diagnosis and treatment. The first author (PC) was a featured speaker in November 2010 at "I Seminário Internacional – A Educação Medicalizada: Dislexia, TDAH e Outros Supostos Transtornos," a conference in San Paulo examining the medicalization and increased medication of children's behavior problems (especially dyslexia and ADHD). The event reflected some resistance to the biomedicalization of psychiatry, especially by psychoanalysts and those identified with critical or anti-psychiatry, as others have noted (Behague, 2009). ADHD diagnosis may be somewhat slowed, however, because mental health practitioners are for the most part psychoanalytically oriented and are scarce beyond the main urban areas (Rohde, 2002); diagnoses of ADHD continue to increase nevertheless (Biatriz de Souza, personal communication 2010).

3. Vehicles for ADHD's global migration

To the extent that there is a globalization of psychiatric diagnoses (Watters, 2010) such as ADHD, how do we understand the means of diagnostic migration? What is the potential impact of the globalization of ADHD? Hinshaw and Scheffler (2014) point to the rise of compulsory schooling and the pressures of global academic performance as the context for the rise of the identification and treatment of ADHD. We have identified five key vehicles that appear to contribute to the globalization of ADHD: 1) the transnational pharmaceutical industry, 2) the increasing influence of biologically-oriented American psychiatry as a standard, 3) the adoption of DSM-IV criteria for diagnosing ADHD, 4) the Internet, including the availability of specific and simple screening checklists, and 5) ADHD advocacy groups. We discuss each of these in more detail below.

3.1. The transnational pharmaceutical industry

The pharmaceutical industry has long had an international presence. This is not news. What is relevant here is that ADHD and its medication have become a place for potential pharmaceutical market expansion. Private market research firms have documented the "growth potential for ADHD markets." One major report by Global Data, titled, "Attention Deficit Hyperactivity Disorder (ADHD) Therapeutics – Pipeline Assessment and Market Forecasts to 2018", states:

> Global Data estimates that the global ADHD therapeutics market was valued at $3855.6m in 2010, and is forecast to grow at a compound annual growth rate (CAGR) of 8.0% over the next eight years, to reach $7114.5m by 2018. …Between 2010 and 2018, the global ADHD market is expected to grow at a CAGR of 8%. The growth rate is similar across the US and European countries, but it is slightly high in Japan (18.4%). This difference across geographical markets exists because of the variation in the approval date for some of the drugs in the US, Europe and Japan…. During this forecast period, patents for various drugs such as Adderall XR, Daytrana, Concerta (methylphenidate), Strattera (atomoxetine) and Kapvay are set to expire. However, the losses due to expiry of these patents would be compensated by new drugs entering the market such as Vyvanse and Intuniv. Thus, the global ADHD market will show a steady growth from 2010 to 2018. (http://www.reportsnreports.com/reports/135322-attention-deficit-hyperactivity-disorder-adhd-therapeutics-pipeline-assessment-and-market-forecasts-to-2018.html)

The report proceeds to identify the following countries – the U.S., France, Germany, Italy, Spain, the U.K. and Japan—as key markets which have already been developing from 2005 to 2010. The lifting of severe legal restrictions on ADHD stimulants in countries like Italy and France make these markets more appealing and accessible to pharmaceutical companies.

Another market research firm, Global Industry Analysts issued a report which announced "Global ADHD Therapeutics Market Research to Reach $4.2 Billion by 2015." (http://www.strategyr.com/pressMCP-6195.asp). They suggest that the "global market for ADHD drugs is severely constrained by the lack of awareness of the disorder, even in developed countries such as the U.K., Germany and Japan" and they call for more marketing and advertising to physicians, and where possible, to potential consumers. Arguments are proposed for increased "education" about ADHD diagnosis and treatment.

The pharmaceutical industry has also expanded its marketing efforts to try to reach new groups. While efforts to target consumers (e.g. through direct-to-consumer advertising) and physicians (e.g. via physician-oriented lectures, meals and gifts, etc.) are not new, efforts to target non-medical professions such as teachers are more nascent. Teachers often play an integral role in ADHD diagnosis and treatment due to the extended periods of time they spend interacting with children throughout the school year. Teachers (as well as school nurses) also are often expected to participate in diagnostic assessments for ADHD and may be involved in administering ADHD medication. Phillips (2006) describes the teacher's role as one of "sickness and treatment broker", or "disease spotter" and notes how drug companies often attempt to influence teachers' views about ADHD:

> As teachers have some agency in diagnosing ADHD, and may in fact contest the diagnosis, the pharmaceutical industry has an interest in directing teachers toward medical treatment. Pharmaceutical companies have been able to exploit the Internet to access teachers and to influence their brokerage role. The approach to teachers tends to mirror strategies used to familiarize doctors with pharmaceuticals.

Pharmaceutical companies such as Pfizer and GlaxoSmithKline, as well as the Association of the British Pharmaceutical Industry, have created a variety of "online science educational materials" for teachers (Phillips, 2006). While these sites might not explicitly promote their company's product, they may nonetheless "reinforce the place of the pharmaceutical industry as a benevolent and authoritative presence within the school, much as the provision of branded educational materials to doctors reinforces the position of the pharmaceutical industry within the clinic" (Phillips, 2006). The extent to which such Internet sites are used and/or shape educators' views and practices is unclear and requires empirical research. Such tactics may, however, play a role in the spread of ADHD diagnosis and treatment.

While the U.S. may be nearing saturation in ADHD diagnosis and treatment, much of the rest of the world represents attractive markets for the various ADHD medications. As the IMS Institute for Healthcare Informatics noted, "Rising incomes among consumers in emerging markets like China, India, and Brazil are poised to drive global growth in the pharmaceutical industry in the next five years" (Thomas, 2012). It is perhaps indicative of this goal to move beyond the increasingly saturated U.S. market that, similar to other reports, the Global Industry Report subdivides its publication in terms of the U.S. and the "Rest of the World."

3.2. Influence of western psychiatry

There is no question that U.S. psychiatry is increasingly dominated by modes of biological psychiatry (Watters, 2010; Carlat,

2010). Treatment of ADHD primarily with psychoactive medications (stimulants) has always been a biopsychiatric approach and may be viewed as a biological treatment harbinger for minor psychiatric disorders. While there are still countries where psychoanalytical approaches dominate (e.g. France, Italy), biological psychiatry appears to be extending its reach beyond the U.S.

There are a number of ways this may affect the globalization of ADHD diagnosis and treatment. Some recent observers have suggested that psychiatric training, foreign and U.S.-based, is becoming more similar (Zisook et al., 2007). Training opportunities in child psychiatry, are also often limited in many countries. The WHO *Psychiatric Training Atlas* (WHO, 2005), which gathered information from >100 countries, reported that only 29 reported having child psychiatric training programs in their country. Twenty-eight of 74 countries had some agreement to send students to another country for specialized training. Gogineni et al. (2010) state that, "Historically, IMGs have played a critical role in filling positions in child psychiatry," in the U.S. though "the IMGs selected for training in child psychiatry decreased from 250 in 2006 to 226 in 2009." Thirty-five countries reported <500 psychiatrists were residing in the country while 11 countries reported that >30 psychiatrists had trained abroad (http://www.who.int/mental_health/evidence/Atlas_training_final.pdf).

International medical graduates (IMGs) come to the U.S. from 140 different countries and constitute 1/3 of the current residency positions (AMA, 2008). Some graduates remain in the U.S.; nearly 30% of practicing psychiatrists in the U.S. are IMGs (AMA, 2008). While it is unclear how many IMGs who are trained in psychiatry return to their original country, such psychiatric 'exchange' may influence whether psychiatric norms regarding diagnosis and treatment utilized in U.S. psychiatry migrate elsewhere.

In the past decade several jointly authored self-ascribed "international consensus statements" appeared in the psychiatric and medical literature. These statements may serve to supply professional support and promotion for the diagnosis. Most originated from North America with a global audience in mind. These documents recognized some controversies around ADHD and claimed some type of consensus in resolving them. The first one, released in 2002 as the "International Consensus Statement on ADHD" under the auspices of the prominent American ADHD researcher, Russell Barkley, expressed concern about the "periodic inaccurate portrayal of ADHD in media reports" and complained about the views of a "handful of nonexpert doctors" who declare that "ADHD does not exist." The statement declares that the scientific evidence available overwhelmingly supports "ADHD as a valid disorder," a view which the report claims has been supported by half a dozen of psychiatry and psychology's most important professional organizations (Barkley et al., 2002). Elsewhere Barkley noted that the consensus statement has been "translated into several foreign languages" and "is being distributed internationally…." (Barkley, 2002). It is interesting to note that while the report appears to reflect an international consensus, of the 86 co-signers of the statement 88% were from North America, barely an international representation.

In the next few years, several other purported consensus statements appeared in the psychiatric literature (e.g. Kutcher et al., 2004; Remschmidt et al., 2005; Kooij et al., 2010). These mostly attempted to justify and encourage ADHD diagnosis and treatment. For example, Remschmidt et al. (2005: 127) state, "This statement aims to re-affirm ADHD as a valid disorder that exists across different cultures, has a significant global impact, and should be diagnosed and treated where it occurs." Such statements have not gone unopposed. For example, Timimi and thirty-three co-endorsers (2004) challenged Barkley et al.'s (2002) assumption that ADHD identifies conclusively "a group of children who suffer from a common and specific neurobiological disorder." They contend that, "not only is it completely counter to the spirit and practice of science to cease questioning the validity of ADHD as proposed by the consensus statement, there is an ethical and moral responsibility to do so."

One point upon which the consensus statements did generally agree was the notion that the proper diagnosis of ADHD was based on the DSM-IV criteria. For example, as stated previously, an influential statement in Italy emanated from APA recommendations which were based upon DSM criteria. How much direct influence these specific statements had is difficult to say, but as the following section describes, the use of the DSM-based diagnostic criteria appears to have grown in global influence.

3.3. Moving from ICD to DSM

Related to the increasing influence of American Psychiatry is the growing usage of the DSM, as opposed to ICD criteria, for diagnosing attention and hyperactivity-related behaviors. Physicians throughout Europe have traditionally used the World Health Organization's ICD. A review of the global research literature, however, suggests that diagnostic criteria in the APA's DSM, now in its 5th edition, are increasingly being adopted to diagnose and treat ADHD. Table 2 illustrates several of the key differences between the two approaches. As stated previously, the ICD denotes a condition called hyperkinetic disorder (HKD), which in many ways is similar to ADHD, but provides a somewhat different and higher threshold for diagnosing ADHD-like symptoms.

For example, the ICD-10 diagnosis requires inattention, impulsivity and overactivity to be present for HKD while the DSM-IV requires only two dimensions of these behaviors (Lee et al., 2008). The DSM-IV also counts a greater number of behaviors as indicators of overactivity/hyperactivity than does the ICD-10. Both criteria ascribe motor restlessness, excessive fidgeting, "off-task activity" and difficulty staying seated as part of their diagnosis (WHO 190; APA 79). The DSM-IV (79), however, also counts "blurting out answers," "talking excessively," "difficulty playing or engaging quietly," "difficulty awaiting one's turn" and "frequently interrupting or intruding on others". The two manuals also differ with respect to what qualifies as "inattentiveness." The DSM-IV stipulates more behaviors as indicators of inattention (e.g. carelessness, disobedience, forgetfulness, and trouble organizing activities). The ICD requires that diagnosable behaviors appear in ≥2 settings (e.g. home and school) while the DSM prefers symptoms in two settings, but allows a diagnosis in a single setting (e.g. school). In addition, the ICD-10 prohibits the diagnosis of HKD when the patient has certain comorbidities (e.g. anxiety disorders, mood disorders, pervasive developmental disorders or schizophrenia); the DSM-IV does not prohibit the diagnosis of ADHD in such cases. Considering the differences in diagnostic definitions described above, it is perhaps not surprising that Jensen (1999) reports far lower diagnostic rates for a disorder when the ICD-10 is used instead of the DSM-IV (~1% vs. 5%). When compared, it is easy to see

Table 2
Criteria for ADHD and hyperkinetic syndrome.

DSM-IV	ICD-10
- ADHD - Symptoms in 2 Dimensions* - Can do a diagnosis with symptoms in 1 dimension - Requires some impairment in more than 1 setting - Comorbid conditions permissible	- Hyperkinetic Syndrome - Symptoms in all 3 dimensions* - Requires all criteria in at least 2 situational contexts - Mood, anxiety, developmental disorders are exclusion diagnoses

*Inattention, overactivity, and impulsivity.

why the DSM would yield higher rates of prevalence and treatment for disorder than the ICD (Moffitt and Melchior, 2007).

Sometimes the adoption of the DSM criteria is a stated option, as with NICE guidelines in the U.K. Other times it has become the preferred diagnosis, as with Brazil. As most of the research on ADHD was conducted using DSM diagnostic criteria, researchers have argued that it makes sense to align diagnostic practices with what may appear to be the standard approach (Fegert, personal communication, 2011). However, the DSM casts a bigger diagnostic net than the ICD and it appears to increasingly be the gold standard criteria. As noted previously, Hyperkinetic disorder (ICD-10) refers to a group that forms a severe subgroup of the DSM-IV combined subtype of ADHD (NICE 2009). This can have important implications for increasing the prevalence of ADHD diagnosis and treatment. Only in rare cases (e.g. in France) do both diagnostic criteria appear to be predominantly replaced by a stricter diagnostic system.

3.4. The Internet

The advent of the Internet has had a significant effect on illness and medicine, by making health-related information more available (Akatsu and Kuffner, 1998; Fox, 2005), providing possibilities for health consultations (Ayers and Kronenfeld, 2007; Nettleton et al., 2005) and providing new opportunities for mutual support and self help through numerous illness electronic support groups' newsgroups, list-serves, chat rooms, and bulletin boards (Eysenbach et al., 2004; Fox and Fallows, 2003; Barker, 2008; Conrad and Stults, 2010). Several studies show that health information is among the most frequently searched information on the Internet (Cohen and Sussman, 2010). Recent statistics estimate >2.2 billion Internet users, and the numbers continue to grow, with 500% growth since 2000 (http://www.internetworldstats.com/stats.htm). While there is undoubtedly global heterogeneity in terms of use (e.g. most users reside in North America, the fewest users reside in Africa), the Internet is essentially available globally.

While we have no way of easily measuring how often and in what ways the Internet is used for ADHD, much of our research into the global growth of ADHD points to its usage. The increase in parent support groups has altered the understanding, acceptance, and treatment of ADHD dramatically in various countries (Green and Chee, 1997: 202). The U.K.-based group "ADDers," for example, works "to promote awareness to Attention Deficit/Hyperactivity Disorder and to provide information and as much free practical help as we can to sufferers, both adults and children, and their families in the UK and around the World." Aforementioned groups from Italy also disseminate various ADHD-related information via the Internet. Such sites provide easy access to ADHD information and may well increase the number of individuals who consult a physician about a diagnosis. Many sites also describe ADHD in biomedical terms – providing lists of possible signs and symptoms, and noting the need to consult a physician for a diagnosis.

We have found ADHD Internet support groups in all five of the countries we examined, and in many others. Many of these interactive sites are connected to U.S. support groups like Children and Adults with Attention Deficit/Hyperactivity Disorder (CADD) or ADDers.org and thus are an important channel for sharing information. These support group sites appear in the native language of the country of origin, but with translation programs like "Google Translate" most information on the Internet is potentially accessible to people who speak different languages (see http://www.healthcentral.com/adhd/c/1443/15863/adhd-world).

In addition to the online support groups, there are local medical websites, sometimes supported by professional associations. Major drug companies like Novartis and Shire have websites presenting ADHD information, screening devices (see checklists, below), and promotions for their drug products. These sites are typically in the language of the host country and sometimes provide translated pages as well. Google Scholar and other local journal search engines can also provide access to some professional and research articles and again, via online translation programs some kinds of rudimentary translations are possible.

The Internet knows no national boundaries and appears to be a major vehicle for ADHD diagnostic migration. Much of the ADHD information that emanates from the countries where the ADHD diagnosis is well-established (e.g. the U.S.) is almost equally available in countries where ADHD is as yet less frequently diagnosed. Most of these sites are open-access, available to anyone with access to the Internet who chooses to visit them.

Another Internet related vehicle for the migration of ADHD and other psychiatric disorders, is the wide availability of specific and simple "checklists" on the Internet, may facilitate pre and/or self-diagnosing, thus increasing the likelihood to seek or obtain a medical diagnosis and treatment (Ebeling, 2011). Online sites for ADHD (e.g. support groups, medical and pharmaceutical sites, etc.) often provide purportedly validated screening tools for identifying ADHD (e.g. Connor's Rating Scale, the Vanderbilt Scale). The ADDers group, for example, displays the Connor's Rating scale on its website (http://www.adders.org/info45.htm) as an example to parents of what they might encounter if they seek a diagnosis for their child.

These checklists typically emanate from the U.S. but are often modified into other languages to cater to people in other countries. AIFA, for example, provides a downloadable, Italian version of the Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist on their website, titled "Scala di autovalutazione V1.1 (ASRS-V1.1) per l'ADHD nell'adulto da WHO Composite International Diagnostic Interview." The original checklist emerged from a collaboration between the Workgroup on Adult ADHD, which consisted of a team of three U.S. health professionals and the WHO.

Other online checklists are informal, abbreviated adaptations of scales, often consisting of a number of brief questions about behavior. One such checklist appears on the U.K.'s "netdoctor" site (http://www.netdoctor.co.uk/adhd/howdoiknowifihaveadhd.htm), under the title "Questions to ask yourself." The site states that, "Not all people with ADHD have these symptoms. But if a lot of this sounds familiar, and you can recall these symptoms in childhood, it might help to speak to your family doctor about them." The preamble to another checklist suggests that their criteria may provide a point of departure for a formal medical diagnosis:

> When children have problems at school or with their behavior, it is often suggested that they have attention deficit hyperactivity disorder and that they should have further testing or evaluation.
>
> These evaluations often begin with parenting and teacher checklists to see if the child has enough symptoms of inattention, and/or hyperactivity and impulsivity to meet the criteria for having ADHD. While this form can't diagnose a child with ADHD, it can be helpful to guide you to see if your child does need additional testing. When filling out this form, think about your child's behavior over at least the past six months.

At best, checklists are designed for screening or even self-screening; they can also become what Ebeling (2011) calls "a marketing of self-diagnosis." They do not, however, indicate a diagnosis per se. As Horwitz and Wakefield (2007) point out in a different context, checklists decontextualize behaviors, draining them of any meaning. Such screening devices sometimes get

interpreted by parents, children, or even professionals as indicating the validity of a diagnosis. Without a proper understanding of the context in which the behavior occurs, however, it is sometimes difficult to discern it's meaning.

In still other cases, sites provide information regarding how ADHD is diagnosed, providing a list of symptoms and criteria, which often align with a diagnostic manual. ADDiSS's site (http://www.addiss.co.uk/adhd.htm), for example, provides background, diagnostic criteria, and symptom lists under their ADHD "Information centre." The page refers to both the DSM-IV and ICD-10. "ADHS Deutschland e.v." (http://www.adhs-deutschland.de/desktopdefault.aspx/tabid-12/69_read-65/) in German provides a similar list under their "Diagnose" page.

These checklists, both formal and less formal, may facilitate pre and/or self-diagnosing. In a sense they are ADHD made simple, a do-it-yourself diagnosis. The origins of these checklists are in the U.S. and they often serve as a way of popularizing the DSM-IV criteria.

3.5. Advocacy groups

Advocacy groups play an important role in spreading awareness about, and shaping policy around ADHD diagnosis and treatment. The non-profit patient organization Associacao Brasileira Do Deficit De Atencao (Brazilian Association Attention Deficit/ABDA) in Brazil, for example, provides support group services, information about diagnosis and treatment, and telephone and email support to individuals with ADHD and their families. Their webpage – which they note receives an average of 200,000 monthly visits – also provides detail about ADHD-related policy in Brazil (http://www.tdah.org.br/br/a-abda/quem-somos.html). They describe legal protections for individuals with disabilities, and the organization's support of policy efforts to secure educational resources in school for individuals with ADHD.

This group and others like it are often funded in part by pharmaceutical companies like Novartis, Janssen-Cilag and Shire (Barbarini, forthcoming). Many such groups are also connected to the U.S.-based organization Ch.A.D.D (Children and Adults with Attention Deficit/Hyperactivity Disorder), which provides education and support about ADHD diagnosis and treatment and advocates for legal protections (e.g. at work and in school) for individuals with ADHD. The group holds conferences that bring together lay and professional groups around topics related to ADHD diagnosis and treatment and they are often listed as a resource on other groups' sites.

Such advocacy groups—online or face-to-face—are common in the U.S. and increasingly common in many other countries. Groups exist at the local (Ch.A.D.D.'s chapter in dozens of U.S. locales; ADHD Support Group Cornwall, and other cities in the UK), national (e.g. French Adult ADHD Association; Center for ADD/ADHD Advocacy, Canada (CADDAC)) and even international level (e.g. ADHD Europe, and the World Federation of ADHD), and they tend to bring together stakeholders from various backgrounds. As noted previously, AIFA collaborated with the Italian Association of Paediatricians to raise awareness about ADHD and its treatment with methylphenidate, and was influential in bringing methylphenidate back to the Italian market (Bonati et al., 2001a; Bonati, 2005; Frazzetto et al., 2007). Groups' are often comprised of individuals with backgrounds in various fields, including education, psychiatry, neurology, and psychology, as well as individuals diagnosed with ADHD and their family members (ADHD Information Services [ADDISS] in the UK; HyperSupers TDAH in France; ADHS Deutschland e.V. in Germany).

Similar to online checklists, the online presence of many advocacy groups may facilitate pre and/or self-diagnosing, thus increasing the likelihood to seek or obtain a medical diagnosis and treatment. Group pages often provide information about diagnostic criteria and the online checklists. Various sites provide information about treatment as well, even providing contact information for local professionals (e.g. psychiatrists, psychologists, ADHD coaches, etc.). The U.K.-based site AADD-UK, for example, provides a "Help & Support" page with information on how to find an ADHD provider. The aforementioned ABDA site provides information about medical approaches to ADHD and includes a registry of ADHD specialists. For well established organizations like Ch.A.D.D. an online presence provides a way to reach audiences beyond their country of origin. For newer country-based organizations it creates links to exchange information and strategies for supporting ADHD diagnoses and treatments.

4. Points of resistance

While it seems evident that ADHD diagnosis and treatment are spreading in a wide range of countries, and that several key vehicles may facilitate that migration, this is an uneven process. In some countries the growth of ADHD diagnosis has been rapid, while in other countries we see much less use of the diagnosis. An examination of these points of "resistance" is beyond the scope of this paper but we briefly note several main points here.

In countries where the ICD remains the diagnostic touchstone, fewer people are likely to be diagnosed and treated as having ADHD. In some of these countries there is also a concern that an ADHD diagnosis is a label that carries with it a stigma an individual must manage (Mueller et al., 2012). In countries such as France, where psychoanalytic psychiatry remains strong or dominant (Misès et al., 2002), there is a resistance to adopting an ADHD diagnosis and an even greater reticence to prescribing psychoactive medications (Vallee, 2011). Forms of psychotherapy or parent engagement are much more likely responses to behavioral troubles. Psychoactive medications are often the treatment choice of last resort (Bursztejn and Golse, 2006; Le Heuzey et al., 2006; Vallee, 2011).

In several countries including Italy and France, only specialists like child psychiatrists could historically diagnose and prescribe psychoactive medications (Debroise, 2004; Panei et al. 2010). And in many countries the number of child psychiatrists is very small. When only specialists can diagnose and treat ADHD, fewer people are likely to be diagnosed. The availability of medications can also limit treatment. In some countries few psychoactive drugs are approved for children and in many countries Ritalin and other stimulants are considered a controlled substance. As noted previously, until recently, it was illegal to prescribe Ritalin in Italy—thus restricting pharmaceutical treatment and perhaps, to a degree, diagnosis as well. Even when a diagnosis is made, psychoactive medications are also often expensive and beyond many people's reach, particularly in low-income areas or countries.

Concerns about the safety of ADHD medication may also limit treatment in certain countries. A recent safety review of methylphenidate from the European Medicines Agency, which restricts its recommendations to children >6 years of age and adolescents and does not mention use in adults, has led methylphenidate to no longer be licensed for use in countries like Norway (Kooij et al., 2010: 3). In other countries like the U.K., only some of the numerous drugs used to treat ADHD are available.

Finally, in some countries like Italy there remains a cultural skepticism toward treating behavioral problems with psychoactive drugs. This type of organized popular opposition exists in many countries (e.g. Brazil) but often appears to be limited to the Internet or to some modest protests – which are usually focused on stimulant medication rather than the diagnosis.

While these points of resistance are real and may slow the impending globalization of ADHD, they do not appear to be making a permanent impact on the increasing international spread of ADHD diagnosis and treatment.

5. Globalization and the expansion of medicalization

While systematic data and evidence are still often limited, signs nonetheless suggest a spread internationally of the diagnosis and treatment of ADHD. Furthermore, while each country may have its own specific history of ADHD diagnosis and treatment, we identify five vehicles that appear to facilitate the globalization of ADHD. This case can contribute to the medicalization literature (e.g. Conrad, 2007) by showing how an extant medicalized diagnostic category can migrate from one established location to multiple geographic locations globally.

The pharmaceutical industry certainly plays a significant part in this. In the past two decades, several major drug companies have heavily marketed ADHD and its pharmaceutical treatment in the U.S. (Schwarz, 2013). As the U.S. market for ADHD drugs becomes saturated and patents on drugs near expiration, pharmaceutical companies seek new markets for their products. One way to expand markets is to find new applications for existing drugs (e.g. adult ADHD). Another is to expand to more international markets. Thus there are plenty of incentives for the pharmaceutical industry to promote ADHD and its treatment in more countries around the world. This seems to be occurring first in Western Europe, but also in other countries (e.g. Brazil, Mexico, Japan) as pharmaceutical companies seek new and expanded markets for their products.

The globalization of ADHD could not occur without the influence of American-based psychiatry. While several of the countries we examined have their own "origin stories" about ADHD, the expanding influence of American psychiatry, especially biological psychiatry, is of great significance. Until the 1990s ADHD was mostly diagnosed in the U.S. and a few other countries. But since the 1990s we have seen a diffusion of the ADHD diagnosis and treatment more worldwide. This comes in part from more psychiatrists being trained in the U.S. and bringing these perspectives back to their countries of origin. It also reflects the influence biological psychiatry is having on the field; ADHD with its stimulant treatment option where available may be a harbinger of putative biological causes and treatments.

Another major vehicle for the globalization of ADHD has been the growth in the adoption of the DSM criteria for ADHD. Until the 1990s many countries used the ICD criteria for diagnosis of "hyperkinetic syndrome", which was seen as similar to ADHD. The ICD diagnostic criteria, however, are much more restrictive – with a higher threshold for diagnosis than the DSM. Beginning in the 1990s, international guidelines and psychiatrists were increasingly adopting the DSM criteria's lower threshold for ADHD diagnosis. Part of the rationale seems to be that since most of the ADHD research used the DSM criteria, other countries should adopt it as a type of standardization of diagnosis. The result appears to be a rising ADHD diagnosis and treatment worldwide.

In the past two decades ADHD has also become more well-known in the media (Horton-Salway, 2011) and information has become more accessible on the Internet. There are several ways this effects the impending globalization of ADHD. First, there is an almost endless amount of information available on various sites about ADHD, its symptoms and its treatment. This information exists from numerous sources and in many languages. Various pharmaceutical and professional websites exist, in addition to hundreds of interactive websites in dozens of countries and in numerous languages. Many of these sites are advocacy and support groups, some directly connected to U.S. support groups, spreading ideas about ADHD to anyone who seeks it. We have been particularly struck by the ADHD "checklist", simple screening devices usually based on DSM criteria, that allow Internet users to "measure" how many behaviors an individual exhibits that could lead to a possible ADHD diagnosis. These checklists are ADHD made simple, easily usable by professionals, consumers, and putative patients. Virtually all of these checklists are versions of U.S.-based checklists, and may contribute to the migration of DSM-based ADHD diagnosis.

We note that there are several points of resistance to widespread globalization of ADHD, perhaps most important being the dominance of psychoanalytic or psychodynamic psychiatry in some countries (e.g. France and Italy), the limits or restrictions on stimulant medications in some markets (e.g. France and Italy), and opposition or resistance groups skeptical of ADHD and its treatment (some on the Internet, e.g. in Italy). Our sense, however, is that while these resistance forces may slow the usage of the ADHD diagnosis and treatment in specific locales, they ultimately may only have a small impact of the impending globalization of ADHD.

It is ultimately unclear how far and wide the ADHD diagnosis will migrate and we purposely limit our claims here by using the term 'impending' in the title. Furthermore, data necessary for systematically quantifying and comparing increases in ADHD diagnosis and treatment across countries is currently limited. It is quite apparent, however, that ADHD diagnosis and treatment are on an increasingly global path. Our guess is that in a decade or less, the ADHD diagnosis will be more established and treated worldwide. In addition to making this claim, we also have attempted to show how this may happen.

This review has several important limitations. First, we selected countries using a opportunity sample of cases for which published literature on ADHD was available, and where the literature suggested there were differences over time in ADHD diagnosis and treatment. The descriptions here may thus not generalize to all contexts surrounding ADHD diagnosis and treatment. Further research is needed to explore ADHD in global context in general, and in countries that have received less attention here and elsewhere (e.g. in Asia, Eastern Europe, the Middle East, and Africa). Space constraints and a lack of systematic comparative ADHD research and data limit the scope of this paper.

The case of ADHD nonetheless raises a number of questions about the relationship between globalization and medicalization. The medicalization literature focuses on the definition of a condition and its consequences, with little attention to how the definition migrates or is manifested from one situation to another. Most of the sociological research on medicalization has focused on North America (Conrad, 2007; Clarke et al., 2010) or medicalization in specific countries. There has been some research on definitional expansion (Conrad and Potter, 2000) but considerably less on the acceptance and application of medicalized categories in different geographic locations. With an increasingly "flat" and interconnected world (Friedman, 2005) with permeable national boundaries for medical knowledge (especially in cyberspace), this may be too limited a focus for a medicalization analysis. The shifting engines of medicalization, as in Conrad's (2007) terms, may require an expanded lens. To what extent is the medicalization of human conditions a global phenomenon and how does our analytic stance change as we expand our analytic lens worldwide? Certainly, the migration and differential implementation of medical diagnoses needs to be a central part of this analysis. In this context medicalization is also likely to be a multi-directional project, rather than primarily emanating from the U.S. It might be useful to see how globalized medicalization is related to the concerns about global health and to what has come to be known as global "medical tourism" (Reisman, 2010). The medicalization of the "global mental

health agenda" may divert attention from important social and structural approaches to global health (Clark, 2014). We hope the ADHD case will inspire other researchers to examine further how other medicalized conditions become global diagnoses.

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References

Abraham, John, 2010. The sociological concomitants of the pharmaceutical Industry and medications. In: Bird, C.E., Conrad, P., Freemont, A.M., Timmermans, S. (Eds.), The Handbook of Medical Sociology. Vanderbilt University Press, Nashville TN.

ADHS Deutschland e.v., 2011. ADHS bei Kindern und Jugendlichen (Aufmerksamkeits-Defizit-Hyperaktivitats-Storung). http://www.ag-adhs.de (accessed September 2012).

Agence Nationale de Securite du Medicament et des Produits de Sante, 2013. Methylphenidate: donnees d'utilisation et de securite d'emploi en France. http://ansm.sante.fr/var/ansm_site/storage/original/application/8dd1277a3867155547b4dce58fc0db00.pdf.

Agency for Public Health, 2002. Document from Agenzia di Sanita' Pubblica', Lazio regarding mental health interventions. http://www.asplazio.it/asp_online/tut_soggetti_deb/files/files_sal_ment/TSMREE_2002.PDF (accessed August 2012).

Akatsu, H., Kuffner, J., 1998. Medicine and the Internet. West. J. Med. 169, 311–317.

American Medical Association, 2008. Physicians Characteristics and Distribution in the U.S., 2008 ed. American Medical Association, Chicago.

American Psychiatric Association, 1994. Diagnostic and Statistical Manual of Mental Disorders (IV). American Psychiatric Association, Washington.

Anderson, J.C., 1996. Is childhood hyperactivity a product of western culture. Lancet 348, 73–74.

Associazione Italiana Disturbi di Attenzione/Iperattivita) (AIDAI). www.aidai.org.

Associazione Italiana Famiglie (AIFA). www.aifaonlis.it.

Ayers, S.L., Kronenfeld, J.J., 2007. Chronic illness and health seeking information on the Internet. Health: Interdiscip. J. Soc. Study Health Illn. Med. 11 (3), 327–347.

Barbarini, Tatana de Andrade, July 2014. Medicalization Through ADHD: Support and Resistance Groups in Brazil. Paper prepared for the meetings of the International Sociological Association (forthcoming).

Barker, K., 2008. Electronic support groups, patient-consumers, and medicalization: the case of contested illness. J. Health Soc. Behav. 49, 20–36.

Barkley, R.A., 2002. International consensus statement on ADHD. J. Am. Acad. Child Adolesc. Psychiatry 41 (12), 1389.

Barkley, R.A., et al., 2002. International consensus statement on ADHD. Clin. Child Fam. Psychol. Rev. 5 (2), 89–111.

Basaglia, F., 1982. Conversazione: a proposito della nuova legge 180. In: Basaglia, F. (Ed.), Franco Basaglia, Scritti, dall' apertura del manicomio alla nuova legge sull' assistenza psichiatrica, vol. 2. Turin, Einaudi, pp. 1968–1980.

Behague, D.P., 2009. Psychiatry and politics in Pelotas, Brazil: equivocal quality of conduct disorder and related diagnoses. Med. Anthropol. Q. 2 (4), 455–482.

Besoli, G., Venier, D., 2003. Il disturbo di attenzione con iperattivita: indagine conoscitiva tra I pediatri di famiglia in Friuli-Venezia Giulia, vol. X. Quaderni ACP, pp. 8–9.

Bianchini, R., Postorino, V., Grasso, R., Santoro, B., Migliore, S., Burlo, C., Tata, C., Mazzone, L., 2013. Prevalence of ADHD in a sample of Italian students: a population-based study. Res. Dev. Disabil. 34 (9), 2543–2550.

Bonati, M., 2005. The Italian Saga of ADHD and its treatment. In: Lloyd, G., Cohen, D., Stead, J. (Eds.), New Critical Perspectives on ADHD. Routledge, London.

Bonati, M., Impicciatore, P., Pandolfini, C., 2001a. Reintroduction of methylphenidate in Italy needs careful monitoring. Br. Med. J. 322 (7285), 555.

Bonati, M., Impacciatore, P., Pandolfini, C., 2001b. Evidence and belief in attention deficit hyperactivity disorder: reintroduction of methylphenidate in Italy needs careful monitoring. Br. Med. J. 322, 556.

Bramble, D., 2003. Annotation: the use of psychotropic medications in children: a British view. J. Child Psychol. Psychiatry 44 (2), 169–179.

Bursztejn, C., Golse, B., 2006. L'hyperactivite avec troubles de l'attention: questions cliniques et epistemologiques. In: Neuropsychiatrie de l'enfance de l'adolescence, vol. 54, pp. 29–37.

Canino, G., Alegria, M., 2008. Psychiatric diagnosis - is it universal or relative to culture? J. Child Psychol. Psychiatry. 49 (3), 237–250.

Camerini, G.B., Coccia, M., Caffo, E., 1996. Il disturbo da deficit dell' attenzione-iperattivita': analisi della frequenza in una popolazione scolastica attraverso questionari agli insegnanti. In: Psichiatria dell' infanzia e dell' adolescenza, vol. 63, pp. 587–594.

Care Quality Commission, 2013. The Safer Management of Controlled Drugs. Annual Report (2012). http://www.cqc.org.uk/sites/default/files/media/documents/cdar_2012.pdf.

Carlat, D.J., 2010. Unhinged: The Trouble with Psychiatry – a Doctor's Revelations about a Profession in Crisis. Free Press, New York.

Chambry, J., 2006. Trouble deficit de l'attention-hyperactivite de l'enfant et l'adolescent: du diagnostic a la prise en charge. Ann. Med. Psychol. 164, 613–619.

Clark, J., 2014. Medicalization of global health 2: the medicalization of global mental health. Glob. Health Action 7, 24000.

Clarke, A.E., Shim, J.K., Mamo, L., et al., 2003. Biomedicalization: technoscientific transformations of health, illness and U.S. Biomedicine. Am. Sociol. Rev. 68 (2), 161–194.

Clarke, A.E., Mamo, L., Fosket, J.R., et al. (Eds.), 2010. Biomedicalization: Technoscience, Health and Illness in the U.S.. Duke University Press, Durham, NC.

Clavenna, A., Rossi, E., Derosa, M., Bonati, M., 2007. Use of psychotropic medications in Italian children and adolescents. Eur. J. Pediatr. 166, 339–347.

Cohen, R.A., Sussman, B., 2010. Health Information Technology Use Among Men and Women Aged 18–64: Early Release of Estimates Form the National Health Interview Survey, January-June 2009. http://www.cdc.gov/nchs/data/hestat/healthinfo2009/healthinfo2009.pdf (accessed January 2014).

Conrad, P., 1975. The discovery of hyperkinesis: notes on the medicalization of deviant behavior. Soc. Probl. Oct. 12–21.

Conrad, P., 1976. Identifying Hyperactive Children: the Medicalization of Deviant Behavior. DC Heath, Lexington, MA.

Conrad, P., 2005. The shifting engines of medicalization. J. Health Soc. Behav. 46 (March), 3–14.

Conrad, P., 2007. The Medicalization of Society: On the Transformation of Human Conditions into Treatable Disorders. Johns Hopkins University Press, Baltimore.

Conrad, P., 2010. The changing social reality of ADHD. Contemp. Sociol. 39, 525–527.

Conrad, P., 2013. Medicalization: changing contours, characteristics and contexts. In: Cockerham, William (Ed.), Health Sociology on the Move: New Directions in Theory. Blackwell, Oxford.

Conrad, P., Potter, D., 2000. From hyperactive children to ADHD adults: observations on the expansion of medical categories. Soc. Probl. 47, 59–82.

Conrad, P., Stults, C., 2010. The Internet and the experience of illness. In: Bird, C., et al. (Eds.), The Handbook of Medical Sociology, sixth ed. Vanderbilt University Press, Nashville TN, pp. 179–191.

Corbo, S., Marolla, F., Sarno, V., Torrioli, M.G., Vernacotola, S., 2003. Prevalenza dell'ADHD in bambini sequiti dal Pediatra di Famiglia. Med. Bambino. 1, 22–25.

De Souza, I., Mattos, P., Pina, C., Fortes, D., 2008. ADHD: the impact when it is not diagnosed. J. Braz. Psychiatry 57 (2), 139–141.

Debroise, A., 2004. Ritaline: Un Feuilleton à la Française. La Recherche 16, 34–36.

Diller, L., 1997. Running on Ritalin. Bantam Books, New York.

Dopfner, M., Frolich, J., Lehmkuhl, G., 2000. Hyperkinetische Storungen. In: Leitfaden Kinder- und Jugendpsychotherapie, Bd 1. Hogrefe, Gottingen.

Ebeling, M., 2011. "Get with the program": pharmaceutical marketing, symptom checklists and self-diagnosis. Soc. Sci. Med. 73, 825–832.

Einersdottir, J., 2008. Teaching children with ADHD: Icelandic early childhood teachers perspectives. Early Child Dev. Care 178 (4), 375–397.

Eysenbach, G., Powell, J., Englesakis, M., et al., 2004. Health related communities and electronic support groups. Br. Med. J. 328, 1166–1170.

Faraone, S.V., Seargeant, J., Gillberg, C., Biederman, J., 2003. The worldwide prevalence of ADHD: is it an American condition? World Psychiatry 2, 104–113.

Fayyad, J., De Graaf, R., Kessler, J., et al., 2007. Cross-national prevalence and correlates of adult attention-deficit hyperactivity disorder. BJP 190, 402–409.

Ferber, L., Schubert, I., Lehmkuhl, G., Spengler, A., Dopfner, M., 2001. Methylphenidat bei hyperkinetiscen Storungen: Verordnungen in den 90er-Jahren. Dtsch. Arztebl. 98 (9), A-541–A-544.

Ferber, L., Lehmkuhl, G., Koster, I., Dopfner, M., Schubert, I., Frolich, J., Ihle, P., 2003. Methylphenidatgebrauch in Deutschland: Versichertenbezogene epidemiologische Studie uber die Entwicklung von 1998 vis 2000. Dtsch. Arztebl. 100 (1–2), A-41–46.

Fox, S., 2005. Health Information Online. Pew Internet and American Life Project. http://www.pewinternet.org/~/media/Files/Reports/2005/PIP_Healthtopics_May05.pdf. http://www.pewinternet.org/~/media/Files/Reports/2005/PIP_Healthtopics_May05.pdf (accessed January 2014).

Fox, S., Fallows, D., 2003. Internet Health Resources. Pew Internet and American Life Project. Retrieved September 5, 2012. http://www.pewinternet.org/~/media//Files/Reports/2003/PIP_Health_Report_July_2003.pdf.pdf.

Frances, C., Hoizey, G., Millart, H., Trenque, T., 2004. Paediatric methylphenidate (Ritalin) restrictive conditions of prescription in France. Br. J. Clin. Pharmacol. 57 (1), 115–116.

Frazzetto, G., Keenan, S., Singh, I., 2007. 'I Bambini e le Droghe': the Right to Ritalin vs the Right to Childhood in Italy. BioSocieties 2, 393–412.

Friedman, T., 2005. The World is Flat: a Brief History of the Twenty-first Century. Farrar, Straus and Giroux, New York.

Gallucci, F., Bird, H.R., Berardi, C., et al., 1993. Symptoms of attention-deficit hyperactivity disorder in an Italian school sample: findings of a pilot study. J. Am. Acad. Child Adolesc. Psychiatry 32, 1051–1058.

Gazzetta Ufficiale della Republica Italiana, No. 230, 3 October 2003.

Germinario, E.A.P., Arcieri, R., Bonati, M., Zuddas, A., Masi, G., Vella, S., Chiarotti, F., Panei, P., The Italian ADHD Regional Reference Centers, 2013. Attention-Deficit/Hyperactivity Disorder Drugs and Growth: An Italian Prospective Observational Study. Journal of Child and Adolescent Psychopharmacology 23 (7), 440–447.

Gogineni, R.R., Fallon, A.E., Rao, N.R., 2010. International medical graduates in child and adolescent psychiatry: adaptation, training, and contributions. Child Adolesc. Psychiatr. Clin. N. Am. 19, 833–853.

Goldman, L., Genel, M., Bezman, R., et al., 1998. Diagnosis and treatment of attention Deficit/Hyperactivity disorder in children and adolescents. Council of Scientific Affairs, American Medical Association. J. Am. Med. Assoc. 279, 1100–1107.
Golse, B., 2004. Enfant de moins de six ans: hyperactivite. Arch. Pediatr. 406–409.
Gomes, M., Palmini, A., Barbirato, F., Rohde, L.A., Mattos, P., 2007. Knowledge about attention-deficit/hyperactivity disorder in Brazil. J. Braz. Psychiatry 56 (2), 94–101.
Goodman, R.D., Neves dos Santos, D., Robatto Nunes, A.P., Periera de Miranda, D., 2005. A survey of child mental health problems in a predominantly Afro-Brazilian rural community. Soc. Psychiatry Psychiatr. Epidemiol. 40, 11–17.
Green, C., Chee, K., 1997. Understanding A.D.H.D: a Parent's Guide to Attention Deficit Hyperactivity Disorder in Children. Vermilion, London.
Green, H., McGinnity, A., Meltzer, H., Ford, T., Goodman, R., 2005. Mental Health of Children and Young People, Great Britain. Palgrave MacMillan, London.
Guareschi-Cazzullo, A., Mazzini-Tomazzolli, C., 1971. La syndrome Ipercinetica, Contributo Casistico ala sua Validita'Nosografica. Neuropsichiatr. Infant. Fasc. 118.
Hinshaw, S., 1994. Attention Deficit Disorders and Hyperactivity in Children. Sage, Thousand Oaks, CA.
Hinshaw, S.P., Scheffler, R.M., 2014. The ADHD Explosion: Myths, Medication, Money, and Today's Push for Performance. Oxford University Press, Oxford.
Hinshaw, S.P., Scheffler, R.M., Fulton, B.D., et al., 2011. International variation in treatment procedures for ADHD: social context and recent trends. Psychiatr. Serv. 62 (5), 459–464.
Hoffmann, H., 1845. Der Sruwwelpeter. http://www.struwwelpeter.com/ (accessed January 2014).
Holowenko, H., Pashute, K., 2000. ADHD in schools: a survey of prevalence and 'Coherence' across a local UK population. Educ. Psychol. Pract. 16 (2), 181–190.
Horton-Salway, M., 2011. Repertoires of ADHD in UK newspaper media. Health: Interdiscip. J. Soc. Study Health Illn. Med. 15, 533–550.
Horwitz, A., Wakefield, J., 2007. The Loss of Sadness. Oxford University Press, New York.
Huss, M., Holling, H., Kurth, B., Schlank, R., 2008. How often are german children and adolescents diagnosed with ADHD? Prevalence based on the judgment of health care professionals; results of the German Health and Examination Survey (KiGGS). Eur. Child Adolesc. Psychiatry 17 (Suppl. 1), 52–58.
Kessler, R.C., Adler, L., Barkley, R., Biederman, J., et al., 2006. The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. Am. J. Psychiatry 163, 716–723.
Knellwolf, A.L., Deligne, J., Chiarotti, F., Auleley, G.R., Palmieri, S., Boisgard, C.B., Panei, P., Autret-Leca, E., 2008. Prevalence and patterns of methylphenidate use in French children and adolescents. Eur. J. Clin. Pharmacol. 64, 311–317.
Kooij, S.J.J., Bejorot, S., Blackwell, A., Caci, H., Casas-Brugue, M., Carpentier, P.J., Edvinsson, D., Fayyad, J., Foeken, K., Fitzgerald, M., Gaillac, V., Ginsberg, Y., Henry, C., Krause, J., Lensing, M.B., Manor, I., Niederhofer, H., Nunes-Filipe, C., Ohlmeier, M.D., Oswald, P., Pallanti, S., Pehlivanidis, A., Ramos-Quiroga, J.A., Rastam, M., Ryffel-Rawak, D., Stes, S., Asherson, P., 2010. European consensus statement on diagnosis and treatment of adult ADHD: the European network on adult ADHD. BMC Psychiatry 10, 67.
Kutcher, S., Aman, M., Brooks, S.J., Buitelaar, J., 2004. International consensus statement on attention-deficit/hyperactivity disorder (ADHD) and disruptive behavior disorder (DBDS): clinical implications and treatment practice suggestions. Eur. Neuropsychopharmacol. 14 (1), 11–28.
Lafortune, D., Meilleur, D., 2014. Medically defining, screening, and treating conduct disorder: a French controversy. J. Child Fam. Stud. 23, 728–737.
Le Heuzey, M.F., Vergnaud, S., Mouren, M.C., 2006. Traitements medicaux de l'enfant hyperactif: a propos des deux nouvelles formes de methylphenidate commercialisees en France. Arch. Pediatr. 13, 100–103.
Lecendreux, M., Konofal, E., Faraone, S.V., 2010. Prevalence of attention deficit hyperactivity disorder and associated features among children in France. J. Atten. Disord. 15 (6), 516–524.
Lee, I.L., Schachar, R.J., Chen, S.X., Ornstein, T.J., Charach, A., Barr, C., Ickowicz, A., 2008. Predictive validity of DSM-IV and ICD-10 criteria for ADHD and hyperkinetic disorder. J. Child Psychol. Psychiatry 49 (1), 70–77.
Lohse, M.J., Muller-Oerlinghausen, B., 2009. Psychopharmaka. In: Schwabe, U., Paffrath, D. (Eds.), Arzneiverordnungsreport 2009 Aktuelle Daten, Kosten Trends und Kommentare edn. Springer Medizin Verlag, Heidelberg, pp. 767–810.
Lohse, M., Lorenzen, A., Muller-Oerlinghausen, B., 2008. Psychopharmaka. In: Schwabe, U., Paffrath, D. (Eds.), Arzneiverordnungs-report 2008. Springer, Berlin, pp. 773–817.
Malacrida, C., 2003. Cold Comfort: Mothers, Professionals and Attention Deficit Disorder. University of Toronto Press, Toronto.
Marchini, L., Puzzo, F., Pirella, A., et al., 2000. Se non sta fermo solo in USA scatta la ricetta. Occhio Clin. Pediatr. 4, 12–14.
Marzocchi, G.M., Cornoldi, C., 2000. Una Sala di Facile uso per la Rilevazione dei Comportamenti Problematici dei Bambini con Deficit di Attenzione e Iperattivita. Psicol. Clin. dello Svilupp. 4, 43–63.
Mayes, R., Bagwell, C., Erkulwater, J., 2009. Medicating Children: ADHD and Pediatric Mental Health. Harvard University Press, Cambridge, MA.
McCarthy, S., Wilton, L., Murray, M.L., Hodgkins, P., Asherson, P., Wong, I.C.K., 2012. The epidemiology of pharmacologically treated attention deficit hyperactivity disorder (ADHD) in children, adolescents and adults in UK primary care. BMC Pediatr. 12, 78.
Mises, R., 2012. Classification francaise de troubles mentaux de l'enfant et de l'adolescent – R – 2012, fifth ed. Presses de l'ecole des hautes etudes en santé publique.
Misès, R., Quemada, N., Botbol, M., et al., 2002. French classification for child and adolescent mental disorders. Psychopathology 35, 176–180.
Moffitt, T.E., Melchior, M., 2007. Why does the worldwide prevalence of childhood attention deficit disorder matter? Am. J. Psychiatry 164, 256–258.
Mueller, A.K., Fuermaier, A.B., Koerts, J., Tucha, L., 2012. Stigma in attention deficit hyperactivity disorder. Atten. Deficit Hyperact. Disord. 4 (3), 101–114.
Mugnaini, D., Masi, G., Brovedani, P., Chelazzi, C., Matas, M., Romagnoli, C., Zuddas, A., 2006. Teacher reports of ADHD symptoms in Italian children at the end of first grade. Eur. Psychiatry. 21, 419–426.
National Institute for Clinical Excellence, 2006. Methylphenidate, Atomoxetine and Dexamfetamine for the Treatment of Attention Deficit Hyperactivity Disorder in Children and Adolescents. Technology Appraisal 98. NICE, London. Available at: www.nice.org.uk/TA98.
National Institute for Clinical Excellence, 2008. Attention Deficit Hyperactivity Disorder: Diagnosis and Management of ADHD in Children, Young People and Adults. NICE Clinical Guidelines, No. 72. National Collaborating Centre for Mental Health.
National Institute for Clinical Excellence, 2009. Attention Deficit Hyperactivity Disorder: Diagnosis and Management of ADHD in Children, Young People and Adults. NICE Clinical Guidelines, No. 72. National Collaborating Centre for Mental Health (UK). British Psychological Society (UK), Leicester (UK).
Nettleton, S., Burrows, R., O'Malley, L., 2005. The mundane realities of the everyday lay use of the Internet for health and their consequences for media convergence. Sociol. Health Illn. 27 (7), 972–992.
Neumarker, K., 2005. Kramer-Pullnow syndrome: a contribution on the life of Hans Kramer and Hans Pullnow. Hist. Psychiatry 16 (4), 435–451.
Orford, E., 1998. Commentary: diagnosis needs tightening. Br. Med. J. 316, 1594–1596.
Ortega, F., Barros, D., Climan, L., et al., 2010. Ritalin in Brazil: Production, Discourse and Practices. In: Interface—Comunicacao Saude Educacao, vol. 14(39), pp. 499–510.
Overmeyer, S., Ebert, D., 1999. Die hyperkinetische Storung im Jugend- und Erwachsenenalter. Dtsch. Arztebl. 96, 1275–1278.
O'Leary, K.D., Vivian, D., Cornoldi, C., 1984. Assessment and treatment of 'hyperactivity' in Italy and the United States. J. Clin. Child Psychol. 13, 56–60.
O'Leary, K.D., Vivian, D., Nisi, A., 1985. Hyperactivity in Italy. J. Abnorm. Child Psychol. 4, 485–500.
Panei, P., Addis, A., Arcieri, R., Chiarotti, F., Knellwolf, A.L., Panci, C., Rocchi, F., Vella, S., 2008. Registro nazionale dell'ADHD (Attention Deficit Hyperactivity Disorder): primo anno di attivita (2007–2008). Istituto Superiore di Sanita, Rome.
Panei, P., Arcieri, R., Bonati, M., Bugarini, M., Didoni, A., Germinario, E., 2010. Safety of psychotropic drug prescribed for attention-deficit/hyperactivity disorder in Italy. Adverse Drug Reaction Bulletin 260, 999–1002.
Parliamentary Office of Science and Technology, 1997. Treating Problem Behavior in Children. OST, London.
Phillips, C.B., 2006. Medicine goes to school: teachers as sickness brokers for ADHD. PLOS Med. 3 (4), 182.
Pichot, P., Guelfi, J.D., Kroll, J., 1983. French perspectives on DSM-III. In: Spitzer, R.L., Williams, J.B., Skodol, A.E. (Eds.), International Perspectives on DSM-III. American Psychiatric Press, Inc., Washington, D.C., pp. 155–173.
Polanczyk, G., de Lima, M.S., Horta, B.L., Biederman, J., Rohde, L.A., 2007. The worldwide prevalence of ADHD: a systematic review and metaregression analysis. Am. J. Psychiatry 164, 942–948.
Polanczyk, G., Laranjiera, R., Zaleski, M., Pinsky, I., 2010. ADHD in a representative sample of the Brazilian population: estimated prevalence and comparative adequacy of criteria between adolescents and adults according to item response theory. J. Methods Psychiatr. Res. 19 (3), 177–184.
Ponde, M.P., Freire, A.C.C., 2007. Prevalence of attention deficit hyperactivity disorder in schoolchildren in the city of Salvador Bahia, Brazil. Arq. Neuro-Psiquiatr. 65 (2), 240–244.
Prendergast, M., Taylor, E., Rapoport, J.L., Bartko, J., Donnelly, M., Zametkin, A., Ahearn, M.B., Dunn, G., Wieselberg, H.M., 1988. The diagnosis of childhood hyperactivity. A U.S.-U.K. Cross-National study of DSM-III and ICD-9. J. Child Psychol. Psychiatry 29, 289–300.
Reisman, D., 2010. Health Tourism: Social Welfare through International Trade. Edward Elgar Publishing, Northampton, MA.
Remschmidt, H., The Global ADHD Working Group, 2005. Global ADHD Working Group. 2005. "Global consensus on ADHD/HKD." Eur. Child Adolesc. Psychiatry 14, 127–137.
Robison, L., Sclar, D., Skaer, T., et al., 1999. National trends in the prevalence of attention-deficit/hyperactivity disorder and the prescribing of methylphenidate among school-age children 1990–1995. Clin. Pediatr. 38, 209–217.
Robison, L.M., Sclar, D.A., Skaer, T.L., Galin, R.S., 2004. Treatment modalities among US children diagnosed with attention-deficit hyperactivity disorder: 1995–99. Int. Clin. Psychopharmacol. 19, 17–22.
Rohde, L.A., 2002. ADHD in Brazil: the DSM-IV criteria in a culturally different population. J. Am. Acad. Child Adolesc. Psychiatry 41 (9), 1131–1133.
Sargeant, J., Steinhausen, H., 1992. European perspectives on hyperkinetic disorder. Eur. Child Adolesc. Psychiatry 1 (1), 34–41.
Scheffler, R.M., Hinshaw, S.P., Modrek, S., Levine, P., 2007. The global market for ADHD medication. Health Aff. 26 (2), 450–457.

Schubert, I., Lehmkuhl, G., Spengler, A., Dopfner, M., Ferber, L., 2001. Methylphenidat bei hyperkinetischen Storungen. Verordnungen in den 90er-Jahren. Dtsch. Arztebl. 98, 541–544.
Schubert, I., Koster, I., Lehmkuhl, G., 2010. The changing prevalence of attention-deficit/hyperactivity disorder and methylphenidate prescriptions. Dtsch. Arztebl. Int. 107 (36), 615–621.
Schwarz, A., December 14 2013. The Selling of Attention Deficit Disorder. New York Times, p. 1.
Schwarz, A., May 16 2014. Thousands of Toddlers are Medicated for A.D.H.D.. Report Finds, Raising Worries New York Times. p. A11.
Sechter, D., 1995. Enquête sur l'utilisation des classifications internationals (DSM III-R – CIM-10) en France, en psychiatrie libérale et publique. L'Encéphale, Vol. Spéc. 35–38.
Skounti, M., Phialithis, A., Galanakis, E., 2007. Variations in prevalence of attention deficit disorder worldwide. Eur. J. Pediatr. 166, 127–133.
Smith, M., 2010. The uses and abuses of the history of hyperactivity. In: Graham, L.J. (Ed.), (De)constructing ADHD. Peter Lang, New York, pp. 21–40.
Squillante, M., 2014. Classifications in child and adolescent psychiatry. Arch. Psychiatr. Psychother. 1, 15–19.
Swanson, J.M., Sergeant, J.A., Taylor, E., et al., 1998. Attention-deficit hyperactivity disorder and hyperkinetic disorder. Lancet 351, 429–433.
Taylor, E., 1986. Overactivity, hyperactivity and hyperkinesis: problems and prevalence. In: Taylor, E. (Ed.), The Overactive Child: Clinics in Developmental Medicine. No. 97. Blackwell, Oxford.
Taylor, E., 1994. Syndromes of attention deficit and hyperactivity. In: Rutter, M., Taylor, E., Hersov, L. (Eds.), Child and Adolescent Psychiatry: Modern Approaches, third ed. Blackwell Scientific Publications, Oxford, pp. 285–307.
Taylor, E., Sergeant, J., Dopfner, M., Gunning, B., Overmeyer, S., Mobius, H., Eisert, H.G., 1998. Clinical guidelines for hyperkinetic disorder. Eur. Child Adolesc. Psychiatry 7, 184–200.
Thapar, A., Holmes, J., Poulton, K., Harrington, R., 1999. Genetic basis of attention deficit and hyperactivity. Br. J. Psychiatry. 174, 105–111.
Thomas, K., 2012. Drug Makers Growth is Linked to Emerging Markets. New York Times July 12.
Timimi, S., Maitra, B., 2009. ADHD and Globalization. In: Timimi, S., Leo, J. (Eds.), Rethinking ADHD: From Brain to Culture. Palgrave Macmillan, New York, pp. 198–217.
Timimi, S., et al., 2004. A critique of the international consensus statement on ADHD. Clin. Child Fam. Psychol. Rev. 7 (1), 59–63.
Vallee, M., 2009. Deconstructing America's Ritalin Epidemic: Contrasting US-France Ritalin Usage (Ph.D. dissertation). University of California, Berkeley, p. 265, 3410842.
Vallee, M., 2011. Resisting American psychiatry: French opposition to DSM-III, biological reductionism, and the pharmaceutical ethos. Adv. Med. Sociol. 12, 85–110.
Watters, E., 2010. Crazy like Us: the Globalization of the American Psyche. Free Press, New York.
Winterstein, A.G., Gerhard, T., Shuster, J., Zito, J., Johnson, M., Liu, H., Saidi, A., 2008. Utilization of pharmacologic treatment in youth with attention/deficit/hyperactivity disorder in medicaid database. Ann. Pharmacother. 42 (1), 24–31.
Wittchen, H.U., Jacobi, F., Rehm, J., Gustavsson, A., Svensson, M., Jonsson, B., Olesen, J., Allgulander, C., Alonso, J., Faravelli, C., Fratiglioni, L., Jennum, P., Lieb, R., Maercker, A., van Os, J., Preisig, M., Salvador-Carulla, L., Simon, R., Steinhausen, H.C., 2011. The size and burden of mental disorders and other disorders of the brain in Europe 2010. European Neuropsychopharmacology 21, 655–679.
World Health Organization, 2005. Atlas of Psychiatric Education and Training across the World. http://www.who.int/mental_health/evidence/Atlas_training_final.pdf (accessed September 2012).
Zisook, S., Balon, R., Bjorksten, K., et al., 2007. Psychiatry residency training around the world. Acad. Psychiatry 31, 309–325.
Zuddas, A., Bonati, M., 2003. Conferenza Nazionale di Consenso. Indicazioni e strategie terapeutiche per i bambini e gli adolescenti con disturbo da deficit attentivo e iperattivita'. http://www.aidaiassociazione.com/documents/ConsensusCaglRelaz.pdf (URL accessed September 2012).