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Original Article

# Cross-national diffusion of mental health policy

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**Abstract**

**Background:** Following the tenets of world polity and innovation diffusion theories, I focus on the coercive and mimetic forces that influence the diffusion of mental health policy across nations. International organizations' mandates influence government behavior. Dependency on external resources, namely foreign aid, also affects governments' formulation of national policy. And finally, mounting adoption in a region alters the risk, benefits, and information associated with a given policy.

**Methods:** I use post-war, discrete time data spanning 1950 to 2011 and describing 193 nations' mental health systems to test these diffusion mechanisms.

**Results:** I find that the adoption of mental health policy is highly clustered temporally and spatially. Results provide support that membership in the World Health Organization (WHO), interdependence with neighbors and peers in regional blocs, national income status, and migrant sub-population are responsible for isomorphism. Aid, however, is an insufficient determinant of mental health policy adoption.

**Conclusion:** This study examines the extent to which mental, neurological, and substance use disorder are addressed in national and international contexts through the lens of policy diffusion theory. It also adds to policy dialogues about non-communicable diseases as nascent items on the global health agenda.

**Keywords:** Policy Diffusion, New Institutionalism, Mental Health



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## Key Messages

### Implications for policy makers

- Mental health policy is a powerful declaration governments make to address mental, neurological, and substance use disorders prevalent in their population.
- Membership in the World Health Organization (WHO) or the United Nations (UN) alone does not predict the adoption of national mental health policy, but their regional offices do have a statistically significant effect on policy adoption.
- Bilateral and multilateral aid are insufficient determinants of mental health policy adoption.
- Prosperous countries are more likely to adopt a mental health policy.
- Countries with a high proportion of migrant to native population are less likely to adopt a mental health policy adoption.

### Implications for public

The current study uses quantitative data to describe the rate and pattern of national mental health policy adoption across 193 nations. Overall, I find that the adoption of mental health policy is highly clustered temporally and spatially. The first interpretation is that the World Health Organization (WHO) exerts an influence on governments, particularly through their regional offices. It can thus be inferred that mounting adoption in a given region alters the risk, benefits, and information associated with mental health policy. The second finding is that aid is an insufficient determinant of mental health policy adoption. Non-communicable diseases are nascent items on the global health agenda, and a mandate to address them is not a condition for exchanging foreign aid. And finally, direct advocacy for mental health has more prominent results in developed countries and countries with a sizable migrant population.

## Introduction

Commonality amidst diversity is a phenomenon where national governments internalize certain norms and models salient in the global society, in turn reflected in isomorphic socio-political policies, structures, and programs. This study focuses on policy diffusion, which I define as a pattern of successive adoption of mental health policy across countries and over time that is indicative of vertical forces, or domestic responses to globalization events, as well as horizontal forces, that is, policy choices in a focal country that was caused by other countries. Countries are increasingly interconnected as information transpires across geopolitical boundaries through communication, collaboration, competition and other norm-setting channels (1,2). World polity and institutional theorists

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share a similar premise as to why: social norms and operational models are first invented and institutionalized within certain countries, spread outside of them, then eventually acquire legitimacy regionally or globally (3). The diffusion of mental health policy, like other innovations, is expected to follow a sigmoidal curve as countries initially adopt a given policy at a rapid rate, reach an inflection point, then taper off from adoption (4,5). This curve reflects the differences among nation-states in their readiness to change and propensity to deal with political and policy risks.

Four mechanisms have been identified and tested in the policy diffusion literature: coercion, emulation, learning, and competition (6,7). These mechanisms can be situated on a coercive-voluntary continuum. On the coercive end, adoption of a particular policy could be attributed to external diffusion pressures stemming from membership in international organizations. Drezner's (1) structure-based approach emphasizes the environmental pressures that tightly constrain national policy responses. For example, political leaders in developing countries have little choice but to accept conditionalities imposed on them by international financial institutions given the dire consequences of refusing debt relief and economic development aid. The magnitude of such environmental pressures directly determines their course of action, in turn leading to policy convergence among countries.

Moving along the continuum from hard to soft power, the catalyst for voluntarily adopting certain policies is to avoid the defamation incurred from other countries for not preserving the status quo. When existing governmental policies are functioning properly there is no need for politicians and public administrators to search for lessons learned elsewhere because everything can operate through established routines. When established routines stop addressing new environmental contingencies, however, a search for new policy, planning, and/or legal solutions becomes necessary (8). An alternative is for decision-makers in a focal country to replicate the *modus operandi* used in other key countries (9). Competition is outside the scope of this study since I am focused on policy ratified to address the burden of mental, neurological, and substance use (MNS) disorders, a problem bounded by geopolitical borders.

The coercion and emulation diffusion mechanisms are significant forms of social communication that link individual countries to the broader global community. This study seeks to advance world society and policy diffusion arguments through the direct testing of these two mechanisms. This paper is organized as follows. I will first discuss policy solutions for mental health problems in the Context section. In the Theory and Hypotheses section, the discussion shifts to how the world society influences countries' behavior by applying external pressure on them to meet obligations to care for the mentally ill population. In the same section, I will also cover the background on countries' likelihood of mimicking policy decisions made by role models in their regions. Historical, geographical, and structural composite characteristics constitute as the emulation mechanism. In the Methods section I will discuss how event history analysis is used to empirically test the predictors of successive mental health policy adoption. This paper closes with a discussion of the intersection of policy diffusion and the health sector.

## Governments

### *Collective problems versus contained problems in health*

Governments and intergovernmental organizations have different policy responses based on the nature and scope of the problem they are trying to tackle. In this section, I will first compare and contrast collective and contained problems, situate the epidemic of mental illness as a contained problem, then discuss world polity members' response to it. The borderless nature of certain threats requires a range of coordinated international responses. Examples of these collective problems include global warming, infectious disease outbreaks, environmental pollution, and foodborne illness. When two or more countries share a problem, they look to each other or to international organizations to jointly formulate an effective solution. Coercive, competitive, and cooperative ways to address collective problems reflect both the functional interdependences and power asymmetry between actors in the world society. In the last section I already remarked on how international standards and principles could raise domestic standards. Foreign direct investment, trade and intellectual property policies increase competition for capital and export markets. Market competition could also have positive spillovers to each country involved, such as decreasing corruption and increasing research and development (10). Taken together, institutional and competitive bandwagons could stimulate both the diffusion and adoption of innovations.

The second type of problem governments confront is largely contained within geo-political borders. Contained problems are concerns for which citizens turn to their government, such as pension reform, human rights legislation, economic reform, and gender mainstreaming. This study deals specifically with the prevalence of MNS abuse disorders. An initial question is whether actors in the world polity share a normative consensus that it is the government's responsibility to provide services to address these disorders. A secondary question is whether third parties, such as international governmental organizations (IOs), voluntary associations, and professional societies, consider it necessary for national governments to meet a certain level of quality for the mental health services rendered. There is anecdotal evidence indicating that spillovers do happen across national and regional boundaries, in cases such as medical tourism, brain drain, multinational corporations offering health products and services, and humanitarian relief efforts, but the development and management of the mental health systems remain, for the most part, responsibilities of national governments.

Mental health systems operate in a strong institutional but weak technical environment (11). The mental healthcare field has historically been fraught with a lack of clarity in the definition of mental disorders and in the therapeutic techniques given to manage symptoms and remedy illnesses. The WHO's International Classification of Diseases and the American Psychiatric Association's Diagnostic and Statistical Manual have undergone 11 and five revisions, respectively, to refine the diagnostic categorization of mental disorders. The construction of mental illness also goes hand-in-hand with gaps in providing preventive, therapeutic, and custodial

care for those in need. The ambiguity in determining the qualification for a clinical diagnosis also blurs the meaning of being in various states - healthy, sick, in treatment, in remission, and in recovery. Mental health treatment is considered to be a "soft technology" because the process of converting an input (i.e. sick client) to an output (i.e. recovered client) requires much more than administering psychotherapy and medication (12). It is perpetually challenging to tackle a contained problem (i.e. burden of MNS disorders) because its means-ends relationship with a touted solution (i.e. MNS health policy adoption) is unclear.

### *Mental health policy*

Psychiatric reforms began in the aftermath of World War II under the guise of modern healthcare that postwar societies are expected to offer their citizens. In many countries, this historically went hand-in-hand with social movements aimed at other marginalized groups in society, such as the emancipation of colonized populations, women's rights, and civil rights. Mental health policy is an official statement that conveys a government's values, principles, and objectives for improving the mental health of its citizens. Townsend *et al.* (13) have observed four broad, salient domains in national mental health policies: context, resources, provision, and outcomes. These domains can be further disaggregated into policy components: organization of services; human resources; involvement of users and families; advocacy and promotion; human rights protection of users; equity of access to mental health services across different groups; financing; quality improvement; and monitoring system. A universal mental health policy template or blueprint does not exist. And in recognition that not all policy domains and components are relevant to different cultural contexts, papers such as Jenkins *et al.*'s (14) have offered methods on how to appraise a country situation to ensure a good fit between a mental health policy and its health system. Room also exists to iteratively revise mental health policies so that their elements can withstand the test of time given finite resources and limited knowledge base available to governments.

National policies have advantages over voluntary standards as IOs' recommendations. Policies lend political support and visibility to the mental health sector. This formal commitment harmonizes the effort and investment different stakeholders make in mental healthcare. Mental health policy is also a mechanism to make governments accountable for allocating resources to meet stated goals, objectives, and targets.

There are at least four ways in which policy-makers become aware of global "best practices" during the mental health policy formulation process. Man-made conflicts and natural disasters have been catalysts for the development of national mental health policy because countries are particularly vulnerable and need humanitarian assistance from non-governmental actors during times of crisis. Humanitarian services lay the foundation for development assistance and protracted economic growth. In the case of mental health, what starts as psychosocial first aid, debriefing, and counseling to change the prognosis of trauma in the aftermath of wars or disasters are precipitous to the expansion of mental health services across the country (15,16). These seminal events ultimately bring international attention to the deficiencies in a focal country.

Three other factors influence the process of policy-making. Pure learning occurs when policy-makers consult the research or grey literature for three types of empirical evidence that would substantiate their decisions: clinical efficacy, effectiveness, and policy research. Learning and emulation mechanisms interact when a focal policy adopter learns about the means-ends relationship from exemplar countries through venues that facilitate policy exchange and dialogue, such as seminars, conferences, declarations, and working groups. Learning and coercion interact when transnational collectives advocate for similar policy development across countries. Examples of these collectives are the International Consortium for Mental Health Policy and Services, the Mental Health and Poverty Research Programme Consortium, the Grand Challenges in Global Mental Health Initiatives, Platform for Innovations in Global Mental Health, and the Gulbenkian Platform for Global Mental Health. The key distinction between humanitarian assistance and the other three ways of influencing mental health policy development is that the former involves civil society and professionals, whereas the latter set is primarily funded and administered by IOs or countries.

## Theory and Hypotheses

### *Coercion*

The world polity shapes countries' identities, structures, programs, and policies via cultural and associational processes (3). Coercion stems from power and resource differences among countries, transnational and international organizations. Coercion can be further categorized as being vertical (i.e. between international organization and countries) or horizontal (i.e. between countries) (6). International organization membership and monetary aid flow are respectively chosen as the main measures of coercion in this study. The assumption behind asserting these coercive mechanisms is that national autonomy and sovereignty are largely absent.

### *Vertical coercion*

IOs promote legitimated models, norms, and principles to their members. They disseminate standards through their ties with individual sovereign states, regional blocs, or multi-member cooperatives (e.g. BRICS, MINT). They also employ a mix of financial and non-financial instruments to buttress their promotion of sector-wide reforms.

The motto "no reform, no money" implies that countries must follow best practices or, at the very least, strive to meet IOs benchmarks - not doing so would jeopardize countries' chances of receiving loans and structural adjustment packages. International financial institutions - most notably the International Monetary Fund and the World Bank—and regional development banks make decisions about a country's need for aid and set loan conditions oftentimes based on its standing in the international investment community (17). Taking development aid as an example, foreign entities have spent anywhere from one-third to one-half of the African region's Gross Domestic Product (GDP) on developing its countries' health and education systems (18). Aid-dependence is a double-edged sword: countries

comply with IOs' directives either to receive a benefit (i.e. monetary sum, status enhancement) or to avoid a penalty (i.e. being blacklisted). Either way, aid-dependent countries have little bargaining power when confronted with the decision to either focus on donor-identified problems and international standards, such as the Millennium Development Goals, or remain true to their own set of priorities and cultural values. IOs ultimately shape policy in countries through aid, trade, foreign investment, and security.

IOs also employ a range of "softer" instruments to foster policy development (6,19). Gruber (20) argues that supranational institutions possess "go-it-alone" power, or the ability to unilaterally influence a government's policy choice by altering the nature of the status quo it faces. IOs issue guidelines, rankings, quality scorecards, and target indicators to set said status quo. Weyland (21) called these instruments "availability enhancements" in the context of international financial institutions. These instruments are developed in cooperation with government agencies, academic institutions, professional societies, governing boards, advisory bodies, or expert panels. IOs ultimately help to lower the search cost of acquiring knowledge about policy practices taking place abroad by providing technical assistance on the usage of instruments and access to clearinghouse of statistical information to their member countries.

The World Health Organization (WHO) is a United Nations agency charged with attaining the highest possible level of global mental healthcare since its establishment in 1946. WHO differs from other IOs in unique ways. It is one of the few IOs with the authority to reduce the global burden due to mental disorders[1]. The WHO disburses moderate sums of money to build agenda-setting capacities and to encourage governments to develop new programs within their jurisdictions. However, the WHO does not have the same mandate as a donor, so the entity is unable to make long-term investments in mental health service development. The WHO does not issue laws and legal obligations, such as declarations of intent, treaties, conventions, contracts, and regulations that member states must obey. It does, however, involve third parties (i.e. regional commissions, other UN agencies, professional bodies, academia) to work closely with member states to produce ministerial declarations. Overall, the WHO plays an important role in harmonizing governments' responses to health problems and minimizing discrepancies in policy-making efforts among its member countries.

The WHO's strength lies in the assistance it provides to members during all stages of combating an epidemic: prevention, screening, treatment, and continuous care for people with diseases and disorders. More specifically, the WHO promotes discursive dissemination of health policy and inclusion of health in national agendas through various means: articulation of policy options based on evidence available; provision of technical assistance to countries; publication of policy guidance packages and checklists; commission research; strengthening international and intersectoral partnerships; hosting conferences and meetings; and monitoring and evaluating member states' activities. The *WHO Mental Health Policy and Service Guidance* package and the *Mental Health Policy, Plans and Programmes* module explicitly inform country stakeholders on how to formulate a national mental health policy. Given the WHO's role in moving ideas across national borders, country membership in this international organization is related to policy diffusion following this hypothesis:

*Hypothesis 1: The earlier a country becomes a member of the WHO, the more likely said country will adopt a mental policy.*

IOs have an influence on state members by shaping their understanding of health as a social concern. Hypothesis 1 is proposed to capture the WHO's holistic role as an international organization that helps build health system[2]. There are now 194 members of the WHO, of which 193 are in my study sample. In areas where IOs such as the WHO cannot impose policy innovations on governments against their will, peer-to-peer governmental influence may be a significant way to shape the focal government's preferences.

### Horizontal coercion

Horizontal coercion is observed when two countries are involved in a donor-recipient relationship, and interdependencies between them are due to shared markets and capital flows. A small number of countries (e.g. U.S., Sweden, Japan) actively manage their impression by regularly inviting foreign counterparts to examine their programs and policies. These exemplars also coopt international institutions in order to indirectly motivate other governments to take an expected course of action. Donor countries and IOs have traditionally dictated the terms of financial support for healthcare improvement so that aid recipient countries have to either assume the "vertical" approach—disease-specific interventions - or the "horizontal" approach—broad-based health system strengthening (22).

International aid is related to mental health policy development in two ways. The commitment of donor countries to assist recipient countries in poverty alleviation is a key tenet of the Millennium Development Goals, and will likely remain as one of the Sustainable Development Goals, both adopted by the United Nations. Owing to the bi-directional causality present between poverty and mental ill health, the WHO has called for increased emphasis on those with MNS disorders as a development issue in low- and middle-income countries (23). Lund *et al*.'s systematic review (24) found inconclusive evidence of poverty alleviation interventions on mental health, but they did find an association between mental health interventions with improved economic outcomes. Nonetheless, opportunity exists for cross-pollination of poverty and mental health policy agendas (14). Second, despite a decrease in Overseas Development Assistance since the global economic crisis, donors are increasing recognizing the effect of Non-communicable Diseases (NCDs) disability and mortality (25). National ring-fenced budgets for MNS disorders, a

1. Other IOs that oversee or have overseen mental health and psychosocial support projects include UN agencies (i.e. UNICEF, UNRWA, UNAIDS), EC, and the OECD.

2. There is a strong degree of theoretical overlap among mechanisms of policy diffusion. The WHO could play a role in dictating the content of mental health reforms ("coercion"), encouraging the replication of a 'gold standard' ("emulation"), and/or disseminating principles and country models ("learning") available to policy-makers. The coercive and social emulative accounts would interact if the WHO employed a mix of persuasion and imposition strategies, respectively, to engender policy change among its member countries. I proposed Hypothesis 1 with the aim to capture the WHO's overall *role* as an IO that helps build health system rather than to parse out and scrutinize the various *manner* in which the WHO has engendered mental health policy change since the latter is not fully codified in peer-reviewed or grey literature.

leading cluster of NCDs, exists, albeit as a low proportion of the overall health budget, in four out of five countries Raja *et al*. (26) surveyed. The burden of MNS disorders will continue to pose as a challenge for health system strengthening in different countries and regions (27).

Given that concessions flow from bilateral or multi-lateral organizations to recipient countries, policy influence is hypothesized to follow the the same direction:

*Hypothesis 2: The more Official Development Assistance for Health a country receives from an international organization and/or a donor country, the more likely that focal country will adopt a mental health policy.*

The horizontal, coercive diffusion mechanism involves incentivizing recipient countries to better address mental ill health in their populations.

### *Emulation*

Diffusion theorists share the view that policy choices made in a focal country are shaped by choices made by those in other jurisdictions (5,6,28). The last section laid out the rationale behind overt and active forms of policy contagion, culminating in hypotheses 1 and 2. This section shifts the focus to more covert and passive forms of policy contagion. Mimetic isomorphism is the tendency to imitate another unit, in this case country, under the belief that doing so would yield benefits to the self (29). Emulation differs from learning, a form of instrumental compliance, in that the actor engaged in ritualistic copying does not fully comprehend the boundary conditions needed to achieve success. This is a pitfall of mimicking the success of countries that have already ratified mental health policy. In sum, adopting countries may induce non-adopting countries to choose the same exemplar policies, but not necessarily improve upon them.

### *Status Differentials*

The policy diffusion literature is divided as to whether small, lower status units of analysis are more or less likely to adopt an innovation emanating from large, higher status units. The hierarchical diffusion hypothesis posits that innovations tend to appear in advanced centers, and successively disseminated to less advanced or smaller locales (30). This phenomenon has been observed in the United States, where more industrialized states adopted innovative measures before less developed ones because the former have more slack resources and access to information (5). Small states react by consciously mimicking larger states to demonstrate positioning behavior.

Collier and Messick (19) argued the opposite: Units at lower levels of social, political and economic modernization would *not* adopt innovation. If only necessary conditions hold, there would rarely be any cases of policy adoption below a certain threshold, or a "floor effect", but there would be great variation in the degree of modernization above said threshold. If both necessary and sufficient conditions hold, policy adoption tends to occur when countries reach the same level of modernization. Once a cluster of countries is at the cusp of making a certain commitment, that particular course of action becomes taken-for-granted and institutionalized; other social actors or governments will undertake the same, perceived as obligatory, course of action without extensive rationalization. I take a neutral approach in seeking to understand the probability and timing of mental health policy adoption based on the sampled countries' prevailing social, economic, cultural, and political contexts. Secondarily, countries belonging to one of the five stages of adoption—innovators, early adopters, early majority, late majority, and laggards—may differ on certain national characteristics (4).

A "reference group" provides a benchmark against which other actors in the same population compare themselves to. A more nuanced question is whether laggards in policy adoption emulate countries of equal or higher status. Individuals compare themselves to reference groups of people who occupy social roles to which they aspire (31). Extrapolating to the country level of analysis, governments may imitate what selected countries do in mental healthcare because they are perceived to be both higher status and exemplars. Social network research on structural equivalence would support another claim that policy-makers tend to look to those who share a similar position when they are evaluating different policy options (31). There is also reason to suspect that governments imitate the practices of countries they have a similar social standing with.

Whether a country replicated the mental health policy of a peer or a superior could be inferred from the degree of homophily countries have with preceding adopters, suggesting the following proposition:

*Proposition: Countries that adopt a national mental health policy during the same phase in the diffusion cycle tend to display a higher degree of demographic resemblance to one another than to countries that adopt during other phases.*

The internal determinants model posits that demographic characteristics of jurisdictions affect the rate of policy adoption (5,9). Intrinsic characteristics of countries are thus postulated to be independently responsible for policy adoption and will be treated as covariates in this study's event history analysis.

### *Demographic Differentials*

In addition to temporal and structural factors, geographic proximity could explain an observed pattern and rate of mental health policy adoption. If diffusion travels along geographic lines, then proximate countries would come to resemble one another more than they would to distant ones. Neighbors are countries that share a common geographical border. Crudely speaking, neighbors compete with one another to attract "good things" and repel "bad things". For instance, a negative spillover across jurisdiction lines occurs when the economy of one jurisdiction is in shock because it lacks a tax or fiscal policy that its neighbors recently adopted. Negative spillover is not a concern of this study because the burden of mental disorders is a problem contained within geopolitical borders and therefore a responsibility of the national government. However, the positive influences on policy adoption do span different levels of analysis. Policy-makers' susceptibility to peer influence is a function of the quality and quantity of social relationships they are engaged in (32). "Cosmopolitan" organizations are more likely to monitor comparable organizations. The information and material resources available in a common space helps governments overcome uncertainty—often in the form of negative public opinion—that they would encounter during the innovation

adoption process.

The influence of geography on innovation diffusion is important for three reasons. First, policy diffusion occurs regionally when there is a clear exemplar within it (33). Second, proximity determines adoption when neighbors of the early adopter become increasingly aware of the utility of a given innovation (7). Policy-makers and citizens share a human cognitive bias towards evidence that is familiar and convenient (21). And finally, geographic proximity is likely to increase interaction and communication (8). The satisficing search for solutions to common problems becomes less arduous with inter-governmental interaction and cross-pollination of national media syndicates.

I tested geographic contiguity on mental health policy adoption to juxtapose innovation diffusion with spatial heterogeneity. In a federalist system, the probability of a U.S. state enacting a certain policy is increased when states within the same region have already enacted it (5,28). Mooney (34) is critical of the U.S. state policy research's dogmatic stance on the regionalism thesis. There is also evidence both confirming (35,36) and disconfirming (19,21,33,37,38) a similar conjecture posed for regional blocs' influence on national policy and regulatory development. The lack of consensus on this isomorphic variable is likely due to the level of analysis, scope conditions, and other factors that vary from study to the next. The regional effect is rekindled in this study not solely to preserve tradition, but also to see its relevance to the health sector.

*Hypothesis 3: The higher the proportion of mental health policy adoption by countries in its regional bloc, the more likely a focal country will also adopt it.*

Mental ill health, as a problem framed to be shared among neighboring countries or countries in the same region, is predicted to enhance chances of policy adoption in a focal country. Regional cumulative percentage is a measure chosen, which tallies the total number of countries in a country's own region that have ratified mental health policy. This indicator was constructed for three sets of regions—WHO, UN, and geographic regions—which were separately included in statistical models. In particular, the potential effect of WHO regional offices on mental health policy development was tested as part of hypothesis 3, as well as hypothesis 1, because the WHO can be construed as either a unitary or collective agent. Graham (39) considered IOs to include more than one bureaucratic actor, and subjected to a high degree of internal fragmentation, as collective agents. IOs have multiple offices that are divided by geography and priorities, and the WHO is no different in that it is headquartered in Geneva, and has six regional and 150 offices in countries, territories and areas. Thus, authority is dispersed across global headquarters, regional-, and country-level offices. Regional Directors of the WHO are elected by representatives from their respective regions rather than by the Director-General or Assistant Director-General (40). The regional offices dictate country office budgets; indirectly dictating the portfolio of programs that translate policies formulated in headquarters (41). It is plausible that WHO country-level efforts are much closely connected to the goals espoused at regional offices than at headquarters. In sum, hypothesis 1 follows the assumption that the WHO is a unitary actor, while inherent in hypothesis 3 is the assumption that the WHO is a collective agent[3].

## Methods

I examined the effects of coercion and emulation on the likelihood of mental health policy adoption for 193 countries. The first recorded mental health policy adoption took place in 1950 and the latest year for which data exists on the same event in other countries is 2011. I excluded South Sudan from my sample because it declared independence from Sudan as recently as July 9, 2011, the same year it became the 194th WHO Member Country and also the last year of my study period. Of the 193 sampled countries, 148 countries (77%) adopted a mental health policy during this observation period while 45 countries (23%) did not.

### *Dependent variable*

The dependent variable for this study is the rate of national mental health policy adoption. The source of data is the WHO Mental Health Atlas ("Atlas"), which contains the latest estimate of infrastructure and resources available to prevent and treat mental disorders, and to protect the human rights of people living with those conditions. Atlas was published in 2001 (n= 185 WHO Member States), 2005 (n= 193 WHO Member States), and 2011 (b= 183 WHO Member States) (42). The wording of the questions on national mental health policy are inconsistent across the three cross-sectional waves of Atlas: while the 2001 and 2005 waves asked about the existence of a national mental health policy and, if yes, the year of its *initial formulation*, the 2011 wave asked about the existence of an officially approved mental health policy and, if yes, the name of the document and the year of its *last revision*. To establish the earliest mental health policy adoption, I cross-referenced the Atlas data with data from the WHO Assessment Instrument for Mental Health Systems (WHO-AIMS) and WHO MiNDbank. I used discrete-time event history analysis to examine the timing of mental health policy adoption and tested variables that may have led to the occurrence of this seminal event.

### *Independent variables*

The three primary independent variables of interest are: year of entry into the WHO, amount of aid given or received, and contagion effect within regions. To test hypothesis 1, I created a variable *WHO_entry* using the International Governmental Organization Data, version 2.3 (43) and WHO's *Basic Documents* (40). The second major predictor variable in this study is the amount of aid both given to and received by sampled countries. Two types of aid were accounted for in this study: Official Development Assistance (ODA) and, as a subset of it, Development Assistance for Health (DAH). The Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee collects ODA statistics from 30 DAC member countries, 20 non-DAC countries, 37 multinational organizations, and one private donor. I used data that were recorded from 1980 to

3. The year of WHO entry (hypothesis 1 indicator) and contagion effect of WHO regions (hypothesis 3 indicator) are correlated ($P$= 0.3; $P$< 0.05). And so I built in a robustness check of the latter assumption by testing the effect exerted by UN regional offices or geographic regions on the same outcome. It is also worth noting that, as per Table 1, the three types of contagion effects are highly correlated: the Spearman correlation coefficient between WHO-UN region is 0.82, WHO-geographic region is 0.94, and UN-geographic region is 0.85. All coefficients achieved less than a 0.05 statistical significant level.

**TABLE 1.** Sample means and correlations

**Table 1.** Sample means and correlations

| Variable | Mean | S.D. | Min | Max | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Mental health policy adoption | 0.22 | 0.42 | 0.00 | 1.00 | | | | | | | | | | | | | | |
| 2. WHO entry year | 0.76 | 0.43 | 0.00 | 1.00 | 0.27* | | | | | | | | | | | | | |
| 3. Log of ODA disbursed to recipients | 3.62 | 2.13 | -4.61 | 10.00 | 0.30* | 0.39* | | | | | | | | | | | | |
| 4. Contagion effect - WHO region | 0.38 | 0.31 | 0.02 | 0.91 | 0.30* | 0.10* | 0.10* | | | | | | | | | | | |
| 5. Contagion effect - UN region | 0.45 | 0.28 | 0.06 | 1.00 | 0.42* | 0.19* | 0.24* | 0.82* | | | | | | | | | | |
| 6. Contagion effect - Geographic region | 0.37 | 0.31 | 0.02 | 1.00 | 0.31* | 0.15* | 0.13* | 0.94* | 0.85* | | | | | | | | | |
| 7. Polity score (regime type) | 0.39 | 7.45 | -10.00 | 10.00 | 0.22* | 0.18* | 0.25* | 0.10* | 0.26* | 0.16* | | | | | | | | |
| 8. Independence | 0.37 | 0.48 | 0.00 | 1.00 | 0.07* | 0.35* | -0.01 | 0.20* | 0.07* | 0.19* | -0.22* | | | | | | | |
| 9. World Bank income group | 1.28 | 1.10 | 0.00 | 3.00 | 0.14* | -0.04* | -0.48* | 0.14* | 0.17* | 0.19* | 0.38* | -0.35* | | | | | | |
| 10. Log of disasters | 1.13 | 0.96 | 0.00 | 4.62 | 0.20* | 0.06* | 0.50* | 0.05* | 0.17* | 0.10* | 0.06* | -0.28* | -0.16* | | | | | |
| 11. Instances of war | 0.09 | 0.29 | 0.00 | 1.00 | 0.00 | 0.13* | 0.13* | -0.05* | -0.02 | -0.04* | -0.07* | 0.00* | -0.14* | 0.15* | | | | |
| 12. Globalization Index | 45.69 | 17.88 | 11.92 | 92.72 | 0.33* | 0.10* | 0.02 | 0.24* | 0.38* | 0.29* | 0.59* | -0.35* | 0.76* | -0.03 | -0.15* | | | |
| 13. Migrant: Total Population | 1.22 | 1.47 | -2.30 | 4.46 | -0.17* | -0.09* | -0.47* | 0.10* | -0.05 | 0.14* | 0.07 | 0.02 | 0.54* | -0.38* | -0.15* | 0.39* | | |
| 14. Refugee: Total Population | -2.96 | 2.82 | -11.25 | 3.60 | -0.24* | 0.02 | 0.01 | -0.11* | -0.28* | -0.12* | -0.13* | 0.06 | -0.05 | -0.10 | 0.04 | -0.05 | 0.37* | |
| 15. UN Human Development Index | 0.64 | 0.18 | 0.18 | 0.95 | 0.19* | -0.01 | -0.38* | 0.27* | 0.35* | 0.34* | 0.44* | -0.39* | 0.88* | -0.13* | -0.16* | 0.82* | 0.45* | -0.13* |

ODA= Official Development Assistance; WHO= World Health Organization; *P< 0.05

2011 to create the variable *ODA* to test hypothesis 2. The WHO also collects DAH statistics from 25 donor countries and 119 recipient countries from 2000 to 2010, which were respectively used to create variables *DAH_given* and *DAH_received* to test hypothesis 2. Of note is that ODA and DAH record the amount of aid committed and disbursed separately, so I tested them separately in my analysis. All aid statistics were included in my analysis as either total net or percentage of Gross National Income.

Hypothesis 3 was tested using a measure of the contagious effects of regional reference groups. Previous studies on U.S. states, countries belonging to different regional blocs, and firms suggest that geographic proximity triggers contagion across populations. I thus created the regional cumulative percentage, which is a measure of the total number of countries in a country's own region that ratified mental health policy. Three variables were constructed and included in my statistical model to see if a focal country's decision to adopt a mental health policy was influenced by its neighbors in one of the six WHO (*WHO_cumfreqper*), 22 UN (*UN_cumfreqper*), or six geographic (*GEO_cumfreqper*) regional reference group. They were updated each year of the study period (1950–2011).

### *Control variables*

Countries converge on the measure of mental health policy adoption due to similarities in their characteristics. I narrowly operationalized mimetic isomorphism as geographic proximity in hypothesis 3 and temporality as the dependent variable. To elaborate on the emulation argument, I controlled for a number of time-constant and time-varying factors that may have an effect on the adoption of mental health policy as part of the proposition. The 15 control variables I used fall into five areas: environmental conditions, quality of political institutions, social gradient, stage of economic growth, and population status. They are summarized in Additional file. The purpose of including this battery of control variables is to see if any of them moderated the relationship between the coercive drivers of isomorphism (hypotheses 1 and 2) or contagion effects (hypothesis 3) and mental health policy adoption. These extra-, inter-, and intra-country factors may have waxed or waned in their influence on mental health policy adoption throughout the study period.

### *Analysis*

I used discrete-time event history methods to test the effects of coercion and emulation on mental health policy adoption. Discrete-time event history analysis is an appropriate choice for my time-to-event data because policy adoption is a rare event that usually happens at the turn of the fiscal year. All variables were updated annually except for ethnolinguistic fractionalization, resulting in annual spells with time-varying covariates. Adoption was treated as an absorbing event whereby countries were removed from the risk set upon adoption of a mental health policy. In other words, a country is either censored because it adopted a mental health policy or because it reached 2011, the end of the study period, and has yet to adopt any mental health policy. I constructed and compared study periods resulting from a uniform (i.e. WHO

establishment in 1946, first international mental health policy adoption in 1950) or varied (i.e. year of sovereignty, year of last subordination) entry time. The year of sovereignty and year of last subordination were collected from the Issue Correlates of War Colonial History Data Set. I ultimately decided to start the study period with Japan's unprecedented adoption of mental health policy in 1950, and instead capture the effects of WHO membership as an independent variable and the history of state independence as a control variable. I chose a functional form (i.e. time, time squared, and time cubed) for the baseline hazard function based on an examination of the occurrence of adoption during each year or interval (44). As the final step of the data preparation process, I tested for multi-collinearity among the predictor terms by regressing each independent variable on the other independent variables. If a high correlation between any indicators is observed, I estimated separate equations.

My dependent variable *Pi (t)* is the discrete-time hazard that a country *i* adopts mental health policy at time *t*, given that it is at risk of doing so. *Pi (t)* is related to the covariates with the following equation:

$$Pi(t) = \varnothing\left[\propto + \beta 1 \chi i(t) + \ldots + \beta j \chi i(t)\right] + \mu(t)$$

where *Φ* is the cumulative density function, *α* is the function of the spell, and the *xi (t)*'s are covariates that affect governmental adoption decision. I assumed that *Φ (.)* the cumulative density function for the error term is normally distributed, and I used a logit model to estimate the probability of adoption in a given year within a pooled sample (45). When analyzing panel data in which events occur at regular, discrete points in time, pooled cross-sectional logistic regression is the preferred method for event history analysis (46). The logit link estimates a discrete-time proportional odds model directly analogous to a Cox proportional hazard model, but I prefer the former because it can handle tied events and makes no assumption about the exact timing of an event, presuming only that an event occurred within a given interval (47). Because my dataset contains repeated observations on countries, I estimated robust standard errors using the Huber-White sandwich estimator (48). This method allowed me to relax the assumption of independence of observations and yields asymptotically consistent estimates even when errors are heteroskedastic, as is often the case in diffusion processes. Secondary quantitative data were not available for predictors chosen for all country-years in the sample. And a complete case analysis of data not missing at random can lead to biased parameter estimates, a reduction in sample size, and larger standard errors. Therefore, I elected to perform multiple imputations after examining descriptive statistics for missingness pattern. The objective of multiple imputation is not to predict missing values so that they are close to the true values, but to handle missing data in a way that would result in valid statistical inference (49). I chose the Multiple Imputation by Chained Equation (MICE) approach over the multivariate normal modeling approach because the former better accounts for longitudinal data (50). I carried out multiple imputation in three sequential steps: formulate 20 sets of simulated values, apply standard analyses to each imputed dataset, then pool the imputed datasets to obtain a single set of parameter estimates to account for missing-data uncertainty. For all resulting models, I looked to see if auxiliary R-squares are all below a 0.7 cut-off. I compared models using the likelihood ratio test to help determine the final baseline and multivariate models, which are presented in the next section.

## Results

Displayed in Figure 1 is the diffusion curve of mental health policy adoption globally. Descriptive statistics and a correlation matrix for the variables across all periods are presented in Table 1, while Table 2 shows the results of the event history analyses of national mental health policy adoption. In Table 2, model 1 includes only the control variables, model 2 contains a coercive variable, while models 3 through 6 each contains an emulation variable, and model 7 includes all predictor variables.

Figure 1 shows a discernible cross-national pattern in rates of diffusion. It helped verify that the frequency of the policy adoption over time is normally distributed, and that the cumulative distribution assumed an S-shape from 1950 to 2011. This logistic growth curve holds for international mental health policy diffusion as the year dummies (not reported here) in all event history analysis models had negative coefficient in early years, positive coefficients in the middle, and negative coefficients toward the end of the series. The results indicate partial support for hypotheses of diffusion that stress multilateral relationships countries have with the WHO and bilateral relationships countries have with one another. All models in Table 2 were estimated with year as a quadratic variable because this particular functional form for duration dependence have more favorable deviance, Bayesian Information Criterion (BIC), and degrees of freedom when compared with models containing linear time, log time, and time dummies (45). Hypothesis 1 predicted that the earlier a country became a member of the WHO, the more likely the focal country would adopt a mental policy. The multivariate results show some support for this hypothesis: for every calendar year increase in WHO accession, there is a 1.10 increase in the relative odds of adopting a mental health policy in year *t* given "survival" up to the end of the previous

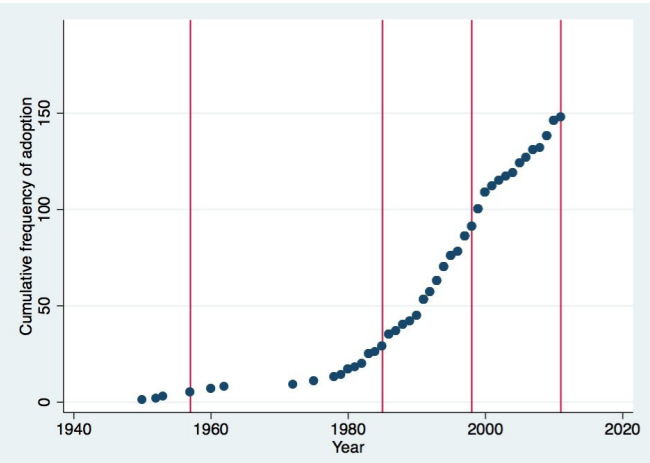


**Figure 1.** Diffusion of mental health policy.
Note: 45 countries are non-adopters and 148 are adopters. Of the adopters, 5 are innovators (1950–7), 24 are early adopters (1960–85), 62 are early majority (1986–98), and 57 are late majority (1999–2011).

**Table 2.** Proportional odds discrete-time event history models predicting national mental health policy adoption

| Independent variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| WHO entry year | | 1.10+ | | | | | 0.82 |
| | | (0.58) | | | | | (0.57) |
| Log of ODA disbursed to recipient countries | | | 0.15 | | | | 0.11 |
| | | | (0.10) | | | | (0.11) |
| Contagion effect - WHO region | | | | 2.83** | | | 3.32** |
| | | | | (1.01) | | | (1.25) |
| Contagion effect - UN region | | | | | 1.76** | | 1.61* |
| | | | | | (0.65) | | (0.66) |
| Contagion effect - Geographic area | | | | | | -0.32 | -3.01+ |
| | | | | | | (1.36) | (1.64) |
| Polity score (regime type) | 0.00 | -0.00 | -0.00 | 0.01 | 0.00 | 0.00 | -0.00 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Independence | -0.08 | -0.22 | -0.08 | 0.00 | 0.05 | -0.09 | -0.04 |
| | (0.25) | (0.27) | (0.25) | (0.25) | (0.26) | (0.25) | (0.27) |
| World Bank income group | 0.28 | 0.34 | 0.42+ | 0.33 | 0.38 | 0.27 | 0.48+ |
| | (0.24) | (0.24) | (0.25) | (0.24) | (0.24) | (0.24) | (0.27) |
| Log of disasters | 0.19 | 0.15 | 0.12 | 0.18 | 0.14 | 0.20 | 0.13 |
| | (0.17) | (0.17) | (0.18) | (0.18) | (0.17) | (0.17) | (0.19) |
| Instances of war | 0.05 | -0.00 | -0.01 | 0.00 | 0.01 | 0.06 | -0.02 |
| | (0.36) | (0.34) | (0.36) | (0.37) | (0.38) | (0.35) | (0.35) |
| Globalization Index | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | -0.00 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Migrant: Total Population | -0.27+ | -0.26+ | -0.23 | -0.27+ | -0.29+ | -0.27+ | -0.24 |
| | (0.15) | (0.15) | (0.15) | (0.15) | (0.15) | (0.15) | (0.15) |
| Refugee: Total Population | -0.09 | -0.10 | -0.11 | -0.09 | -0.07 | -0.09 | -0.09 |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.08) |
| UN Human Development Index | -0.40 | -0.51 | -0.22 | -0.95 | -1.04 | -0.28 | -0.44 |
| | (1.49) | (1.46) | (1.49) | (1.56) | (1.51) | (1.55) | (1.60) |
| Year | -0.06* | -0.08* | 0.06* | 0.02* | -0.03* | -0.07* | -0.05 |
| | (0.09) | (0.09) | (0.09) | (0.10) | (0.09) | (0.09) | (0.10) |
| Year^2 | 0.00 | 0.01+ | 0.01+ | 0.00 | 0.00 | 0.01 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Year^3 | -0.00 | -0.00 | -0.00 | -0.00 | -0.00 | -0.00 | -0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | -6.47** | -6.95** | -6.95** | -6.96** | -6.58** | -6.47** | -7.69** |
| | 1.00 | 1.15 | 1.09 | 1.13 | 1.04 | 0.99 | 1.24 |
| Number of observations | 6685 | 6685 | 6685 | 6685 | 6685 | 6685 | 6685 |

ODA= Official Development Assistance; WHO= World Health Organization

*$P$< 0.10, **$P$< 0.05, ***$P$< 0.01.

*Robust standard errors are in parentheses. All models were built after 20 imputations.

calendar year was observed, as shown in model 2 of Table 2. However, the effect size was nullified after controlling for all the covariates in model 7.

In hypothesis 2, I predicted that the more aid a country receives from another country or to an international organization, the more likely said country would have adopted a mental health policy due to conditionalities imposed on aid recipients by donors. I did not find support for this hypothesis using either the ODA or the DAH data. I chose to present only the ODA results in model 3 because of the limited time frame in which DAH data were collected. The coefficient of the logged amount of ODA disbursed, though not statistically significant, suggests that the 159 countries that have received aid are equally likely to adopt a mental health policy as the other 34 countries. Likewise, I found similar coefficients and standard errors for aid reported to have been pledged or disbursed by 45 donor countries, in separate analyses not reported here.

There are two caveats to these null findings. The first is that the architecture of ODA is complex: flows to developing countries and multilateral institutions are provided by official agencies, including state and local governments, or by their executive agencies. Each transaction supposedly meets two stringent tests: it is administered with the promotion of the economic development and welfare of developing countries as its main objective, and it is concessional in character and conveys a grant element of at least 25%. The second caveat is that mental health activities are not assigned its own sector code by the OECD Development Assistance Committee, thus making it difficult to estimate the magnitude of mental health-related activities in relation to other aid activities. Furthermore, health, population, and water and sanitation combined have a small part in the grand scheme of foreign assistance (51).

Hypothesis 3 predicted that this interdependent effect to be more important over time with an increase in the density of countries that have ratified policy for mental health. I argued that regional cumulative percentage is analogous to "peer

pressure" among countries, whether it is countries within a single regional bloc or geographic area that might tend to imitate one another. Indeed, with everyone percentage point increase in the WHO regional percentage of countries, the rate of mental health policy ratification increases by almost 2.83 (model 4) or 3.32 (model 7) relative odds. I also find evidence in support of hypothesis 3 for UN regional blocs: the contagion effect is 1.76 (model 5) or 1.61 (model 7) increase in relative odds of adopting a national mental health policy with every percentage point increase in the UN regional percentage of countries. These coefficients are statistically significant across models. Geographic regions seem to either have the opposite effect on mental health policy adoption, as evident by models 6 and 7, perhaps because countries are less inclined to reconsider their policy stance in the absence of top down, international organization influence. Overall, the proximity of one country to another seems important in light of shared membership in the same regional bloc.

Results for the country demographics variables offer weak support for a diffusion model that emphasizes status differentiation. The proposition posited a higher degree of demographic similarity between countries in the same phase of mental health policy adoption than countries in other phases. Statistically significant effects were observed for World Bank income group and migrants sub-population across the seven models. For every graduation to a higher income group, the relative odds of adopting a mental health policy in a given year increases by 0.42 (model 3) to 0.48 (model 7), holding other explanatory variables constant. For every percent increase in migrants relative to the general population, the relative odds of adopting a mental health policy in a given year decreases by 0.24 (model 7) to 0.29 (models 5), holding other explanatory variables constant. These findings indicate that the more diverse and prosperous countries are, the more likely they would adopt a mental health policy, presumably because mental health policy diffusion was better able to reach these countries due to greater access to information, slack budgets devoted to expanding mental healthcare, and robust infrastructures erected to buttress mental healthcare reform.

The results for the control variables show no support for the argument that a history of state independence—be it formation, colonization partition, or secession—or regime type have any bearings on the likelihood of mental health policy adoption. Post-colonial societies, in particular, did not inherit strong bureaucratic systems in mental health from its colonial rulers. Neither one of the two exogenous forces—occurrence of disasters and globalization—is a significant predictor of adoption. There is also no evidence that the various population measures, namely the proportion of refugees in the lay population and Human Development Index (HDI) score, significantly affected governments' adoption decision. These results indicate that a particular constellation of extra-, inter-, and intra-country parameters is needed to cross the diffusion threshold in order for mental heath policy to be adopted.

## Discussion and Conclusion

Countries exhibit similar a development in mental health policy despite marked differences in governance structures and economic growth trajectories. Policy convergence might be the result of independent responses from countries that face similar epidemiological, economic, and demographic transitions. However, comparative analyses of public policies across countries have revealed alternative explanations for the diffusion phenomenon. Policy diffusion research has shown that adoption is the result of mixed underlying processes involving independent adoption, dyadic emulation, and collective consensus (1,6). What all these pathways have in common is that actors are informed about the policy choices of other actors. Governments are likely to look to countries they perceive to have a high degree of homophily with themselves for solutions to shared policy problems, namely the burden of MNS disorders prevalent in their respective jurisdictions. Similarity in mental health policy could also be due to economic, institutional, communication, and professional linkages that bind countries. The spread of a policy innovation can be facilitated by IOs and regional blocs, which aim to level political and economic asymmetries among member countries. To date, international diffusion of mental health policy has not been examined conceptually and operationalized empirically for a large sample of countries even though the theory of policy diffusion is well established. The objective of this study is two-fold: describe the adoption pattern of mental health policy innovation over time, and analyze the factors that account for the empirically observed spreading process.

The cumulative adoption of mental health policy over time follows an S-shaped curve. I tested myriad spatial, structural and socio-economic factors that could explain this particular adoption pattern among 193 countries over the course of six decades from 1950 to 2011. Internationally-driven initiatives can help raise awareness for mental health. IOs and regional blocs, in particular, can help shape diffusion processes above and beyond the technical and efficiency gains of mental health policy. In this case, mental health policies in the countries experienced changes following advice and consultation from the WHO. Multivariate regression results show that WHO accession has a weak association with mental health policy adoption, and secondarily there is a contagion effect among member countries in the same WHO and UN region. And thus it can be inferred that policy recommendations and norms around mental healthcare cascaded from WHO headquarters to regional offices, then to country offices, and finally to governments of its member countries.

Aid transactions make up another pathway for countries to learn about policy innovations. Secondarily, there is a potential interaction effect between hypotheses 1 and 2 based on evidence of strategic alliances in the United Nations Security Council that were formed based on foreign aid exchange (52). However, I did not find evidence in support of this hypothesis using either the ODA or DAH dataset. Bilateral, multilateral, and private donors stand to foster greater inclusion of mental health into their health system strengthening, disease-specific, and poverty reduction initiatives. This claim also deserves further testing for other disease-specific, economic development or anti-poverty policies as there are still lively debates about the accountability, transparency and overall effectiveness of foreign assistance programs.

Theorists in the policy diffusion tradition have also asked

whether policy convergence is observed for countries sharing the same boundaries. Previous studies have examined whether global (e.g. globalization) or regional (e.g. European integration) have any domestic impact. Policy innovation can transpire through influential ties between geographically contiguous countries for several reasons. Neighbors cooperate to assure consistency in policy regimes across their region. Neighbors also have unrivaled access to one another's policy-making environment for the purposes of social learning and peer comparison (7,28). Indeed, many countries either lead or follow the lead of others in their regional bloc (21,33,37). For these reasons, I operationalized geographic contagion in three ways and found the most pronounced contagion effect for WHO regions, followed by UN regions, but not for geographic regions per se. This speaks to the caveat that the coercive (hypothesis 1) and geographic (hypothesis 3) hypotheses are actually intertwined given that the WHO and UN behaved more like collective agents rather than unitary agents (39).

Converging policy developments are more likely for countries that are characterized by high degree of similarity in institutional arrangements and culture. This proposition held up for national income status and migrant sub-population. The positive association between economic and mental health policy development is not surprising (42). The migration findings, however, deserve further consideration. Emigration involves far-reaching changes in conditions that surround a person, his/her family and community, including associated changes in climate, language, culture, status, and social relations. Early clinical literature on the subject matter concentrates on the adverse effects of migration on schizophrenia, and later expanded to look at depression, anxiety, and post-traumatic stress disorder. There are eight main hypotheses that suggest migration has a causal relationship with mental health: sending countries have high rates of mental disorders; mental disorder predisposes people to migrate; the process of migration produces stress and elevated rates of mental disorders; certain cultural practices of the migrant population get misdiagnosed as a mental disorder; some symptoms of mental disorders are more common amongst the cultures that migrants are from; ethnic density may play a role; concepts of self may influence prevalence; and aspirations and achievement disparity may influence high rates (53,54). Mental ill health among migrant, whether it is due to self-selection or the migratory experience itself, adds to the national prevalence of MNS disorders. Indeed, my results call for more evidence to address this policy problem, especially among countries receiving a high number of migrants. The absence of support for the other country demographic factors invites more research to support the proposition that policy innovations compatible with the experiences, values, ideas, and needs of host countries are more likely to diffuse.

There are three limitations to my study. First, there is a strong degree of theoretical overlap among the mechanisms of policy diffusion tested. I used proxies to measure the ties among countries and between countries and the WHO. The degree of state openness, exemplified by mass media and diplomatic relations, is likely to change governments' opinions of themselves, their peers, and their perceived leaders. Direct contact provides opportunities for up-to-date information, reliable advice, and tacit learning. Past scholarship on interdependence has also suggested that policy diffusion happens in the context of a network such that positions in common, overlapping networks can invoke new cognitive categories, social comparison, and competitive behavior (2,31,55). Future qualitative studies can make a finer grain distinction between communication and influence between the WHO and its member countries, and among member countries. Case studies can elucidate the factors that inhibit or promote the uptake of mental health policy as part of the national policy-making or cross-national policy coordination processes. In future work I hope to refine my estimates of mental health policy diffusion by considering networks that span jurisdictions. Teasing apart these processes would convey information on the potential to impact actions of national governments.

Second, this study is very limited in terms of specifying the political mechanisms that facilitate or impede the acceptance of mental health policy. I used the year of initial mental health policy adoption as the indicator of diffusion. Components of the mental health policy that were added, deleted, or edited in the revision process are proxies of national policy selection processes. Future work remains with analyzing the number and types of policy components and content in each country's mental health policy, which will be possible with the launch of MiNDbank. Not all processes may have, or have fully, manifested during the 61 year study period. Quantitative studies with more statistical power are apt to look at more complex forms of contagion, which entails the mutual reinforcement of multiple independent sources of isomorphism to furnish policy persistence. A new wave of data collection for WHO-AIMS is promising in this regard. In future studies I will exploit information on the distribution and determinants of adoption between mental health policy and policies related to it in order to validate the findings presented here.

Lastly, my study does not speak to the effects of policies pertaining to diseases and disorders comorbid with MNS disorders, such as HIV/AIDS, and social factors associated with them, such as housing and employment. Novella (56) labeled the asylum model of care as "hyper-inclusive" because people served by it are under strict monitoring and control. The shift from this model to a community-oriented one meant granting more opportunities to people formerly marginalized to participate in other spheres of society. Society no longer prevented people with psychiatric disorders from earning and saving money, getting married and starting families, obtaining jobs or attending school, voting, and other entitlement of citizens. And likewise, MNS disorders have identifiable social determinants and protective factors, all of which need to be considered when developing intervention strategies.

Mental health parity, recovery, and deinstitutionalization are not bounded and discrete movements. Rather, health has direct and indirect ties with other policy domains because people with MNS disorders need "continuity of care" or "wrap around services," which are highly individualized, community-based services offered through agencies representing multiple sectors. This is especially the case for people who have been long-term residents of mental

hospitals and asylums, and thus deprived of social exchange with the lay community. The development of general public welfare services have enabled the deinstitutionalization of mental health services, such as poverty reduction, prisoners' rights, disability pensions, public housing, old age pensions, unemployment payments, and universal health coverage. Ideological frames, tactical innovations, and/or organizational structures would presumably "spill over" from one policy domain to another if wrap-around services are coordinated across sectors. According to Jenkins *et al.* (14), opportunities are abound for mental health to be integrated with plans for other diseases and with national health plans, including sector wide approaches, international health partnerships, national strategy applications. Mental health could also be mainstreamed with initiatives in the education and welfare sectors, and with internationally agreed upon needs in poverty reduction, such as the Millennium Development Goals and their successors, the Sustainable Development Goals.

Following this line of reasoning, broader questions than policy innovativeness and diffusion abound: What are the patterns common across policy domains? Do policies interact and jointly determine the likelihood of an individual policy's adoption? The diffusion of mental health policy may be hypothesized to affect the rate, sequencing, and direction of another policy, and vice versa. There is ample room for theorizing on patterns of relationships between mental health and other types of policies.

Diffusion scholars can continue to gain purchase on questions about mental health policy, and about processes that underlie its adoption within and across countries. Policy is not the sole object that diffuses across geopolitical borders. Its adoption also hinges on issue framing and theorized models of implementation. Policies that involve high distributional conflicts among domestic actors and actor coalitions tend to have a lower chance of being adopted than less contested regulatory policies (57). Policies that contain an idea easy to grasp and pose less of a challenge to embedded beliefs of domestic actors are easier to spread. Professional associations, research consortia, advocacy groups, and the media each play a unique role in shaping the cultural cognitive categories, funding structure, perceived costs and benefits, and metrics of success relevant to the policy-making process (58). There is ample room left for theorizing on the forces at play in policy diffusion, as evidence by the boundary conditions I examined in the case of global mental health.

Mental health is a "triply marginalized" issue on the agendas of international organizations and most governments: MNS disorders are marginalized compared to other NCDs; NCDs are in turn marginalized compared to communicable diseases; and health is marginalized compared to other policy areas. Health sector reformers tend to extol the virtues of "silver bullet" interventions, such as antiretroviral treatment, Directly Observed Treatment Short Course, and insecticide treated bed nets. Policy-makers intentionally ignore the complexity in combating the AIDS, tuberculosis, and malaria epidemic when they implement these silver bullets apart from community-based support and rehabilitation practices. The situation is much more dire for MNS disorders, which were left off the agenda of the UN High Level Meeting on Prevention and Control of Non-communicable Diseases in 2011. Policy-makers do not readily grasp the chronic nature of NCDs. The long time it takes for the benefits of prevention, treatment, rehabilitation, and other multi-axial and multi-sectoral interventions to be realized for individuals and for society is a disincentive for policy-makers, administrators, and professional to invest in preventing and treating chronic diseases. The inherent tension and competition for scarce resources between medical and public health communities, combined with cleavages between mental health and other medical professionals further perpetrate widespread stigma against mentally ill people and hinder further investment in mental health at both the planning and policy levels.

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## Ethical issues

The University of California at Berkeley's Committee for the Protection of Human Subjects reviewed and approved the study and its protocol in December 2013.

## Competing interests

The author declares that he has no competing interests.

## Author's contribution

GCS is the single author of the manuscript.

## Additional file

Additional file 1: Contains the appendix 1.

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