A discipline of public psychological health?

Richard Bentall
Understanding the social determinants of mental health requires three problems to be addressed:

• How should we classify and measure mental health/illness?

• How do we measure complex, multi-layered social determinants?

• How do we understand the mechanisms and pathways from the former to the latter (and eliminate confounds)?

If we can solve these problems, the prize is the ability to design non-health interventions to prevent mental illness.
I

Understanding mental illness
The relationship between mental health and wellbeing

It is sometimes assumed that mental illness and wellbeing are opposite ends of a spectrum.

(from Stewart-Brown, 2017)

This is too simplistic:

• Mental illness and wellbeing are highly negatively correlated but distinct phenomena (Keys, 2005).

• Both are affected by social determinants but not in the same way (Stewart-Brown et al., 2015)

• Positive wellbeing protects against future mental illness (Keys, 2005).
The structure of mental illness

Research is converging on a hierarchical structure of psychiatric symptoms (shown here from the US Hierarchical Taxonomy of Psychiatric Disorders (HiToP) project)

From Kotov et al. (2017)
The structure of mental illness

A simpler hierarchical model:

'P' in bifactor models: Caspi et al. (2013); Reininghus, Priebe & Bentall (2013)


Five factor psychosis model: e.g. Demjaha et al. (2009) Van Os & Kapur (2009)

Symptoms

From Bentall (2014)

Which is the right level?
It depends on what you want to know (promiscuous realism).
Specificity adversities affect specific symptoms

We explored associations between specific kinds of adversity and specific kinds of symptoms have in the 2007 Adult Psychiatric Morbidity survey (Bentall et al., 2012):

Table 2: Odds Ratios and Their Associated 95% CI for the Effects of Childhood Sexual Abuse, Victimization, Separation Variables and Total Adversity on AVHs and Paranoid Ideation

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Socioeconomic status</th>
<th>IQ</th>
<th>Rape</th>
<th>Sexual touch</th>
<th>Sexual talk</th>
<th>Physical abuse</th>
<th>Bullying</th>
<th>Institutional care</th>
<th>Local authority care</th>
<th>Number of adverse events</th>
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<tr>
<td></td>
<td>0.54*</td>
<td>0.96*</td>
<td>0.84*</td>
<td>0.34*</td>
<td>1.05</td>
<td>1.06</td>
<td>0.96*</td>
<td>0.94*</td>
<td>0.94*</td>
<td>1.30</td>
<td>1.40</td>
<td>8.52*</td>
<td>1.16</td>
<td>11.08*</td>
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<tr>
<td></td>
<td>(0.30-0.98)</td>
<td>(0.94-0.98)</td>
<td>(0.84-1.32)</td>
<td>(0.17-0.75)</td>
<td>(0.84-1.32)</td>
<td>(0.87-1.31)</td>
<td>(0.94-0.99)</td>
<td>(0.94-0.99)</td>
<td>(0.94-0.99)</td>
<td>(0.45-3.71)</td>
<td>(0.54-3.61)</td>
<td>(3.55-20.43)</td>
<td>(0.81-3.61)</td>
<td>(3.26-37.62)</td>
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<tr>
<td></td>
<td>1.60</td>
<td>1.29</td>
<td>1.77</td>
<td>1.52</td>
<td>4.79*</td>
<td>2.08</td>
<td>1.29</td>
<td>1.31</td>
<td>1.31</td>
<td>2.04</td>
<td>3.04</td>
<td>5.99*</td>
<td>1.32</td>
<td>3.45</td>
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<tr>
<td></td>
<td>(0.81-1.97)</td>
<td>(0.38-4.41)</td>
<td>(0.14-4.37)</td>
<td>(0.58-4.01)</td>
<td>(1.49-15.34)</td>
<td>(0.99-4.37)</td>
<td>(0.38-4.41)</td>
<td>(0.43-4.01)</td>
<td>(0.47-6.06)</td>
<td>(0.72-5.80)</td>
<td>(0.72-5.80)</td>
<td>(2.39-15.07)</td>
<td>(0.71-2.46)</td>
<td>(0.50-23.77)</td>
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<tr>
<td></td>
<td>0.05</td>
<td>0.30</td>
<td>0.06</td>
<td>0.05</td>
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</tr>
</tbody>
</table>

Note: AVH, auditory-verbal hallucinations. Adjusted demographic variables include sex, age, ethnicity, education, social class, and IQ. *p < .05.
I

Understanding social determinants and the effect of place
Symptoms are on continua with healthy functioning

Overwhelmingly, statistical (taxometric) studies support the idea that mental health symptoms exist on continua with healthy functioning (Haslam, Holland and Kuppens, 2012).

For example, Freeman (2005) has proposed the existence of a hierarchy of paranoia.
Taxometric analyses of paranoia data from 2357 healthy, 288 prodromal patients, and 360 schizophrenia spectrum patients. Measures using three statistical methods (MAMBAC top left, MAXEIG top right and L-MODE, bottom panels. For each analysis data are compared with simulated categorical (left) and dimensional (right) data. For each analysis it can be seen that the dimensional model is the best fit (from Elahi, Perez-Algorta, Varese & Bentall, 2017).
From the CLAHRC-NWC Household Survey (McIntyre, Elahi & Bentall, 2018; N = 4,300 from 28 deprived vs non-deprived LSOAs).

Neighbourhood variation in mean paranoia scores (short form of the PADS-P scale; Melo et al 2009, range 0 – 25).
### Neighbourhood effects

Association between neighbourhood index of multiple deprivation and symptoms in the 2007 Adult Psychiatric Morbidity survey (Wickham et al. 2014):

<table>
<thead>
<tr>
<th>Index of Multiple Deprivation to:</th>
<th>Unstandardised</th>
<th>Standardised</th>
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<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$SE$</td>
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<tr>
<td>Definitive Psychosis</td>
<td>.60*</td>
<td>.20</td>
</tr>
<tr>
<td>Probable Psychosis</td>
<td>.48**</td>
<td>.13</td>
</tr>
<tr>
<td>Depression</td>
<td>.27**</td>
<td>.06</td>
</tr>
<tr>
<td>Paranoia</td>
<td>.28**</td>
<td>.07</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>.14</td>
<td>.10</td>
</tr>
<tr>
<td>Mania</td>
<td>.14</td>
<td>.12</td>
</tr>
</tbody>
</table>
Neighbourhood effects

Network analysis of relationships between neighbourhood characteristics and psychiatric symptoms in CLAHRC-NWC survey (McElvoy et al. 2019):

Note that paranoia plays an important bridging role between social cohesion and disorder and other symptoms.
Neighbourhood effects

The bridging effect (paranoia linking neighbourhood characteristics to other symptoms) is only observed in high deprivation neighbourhoods (McElvoy et al. 2019):
Understanding mechanisms by applying our psychological knowledge
Poverty affects psychological functioning

Under the stress of poverty, people show steeper temporal discounting (greater preference for immediate vs distant rewards), leading to poor decision-making.

On the psychology of poverty

Johannes Haushofer1,3,4,6 and Ernst Fehr5,9

Poverty remains one of the most pressing problems facing the world; the mechanisms through which poverty arises and perpetuates itself, however, are not well understood. Here, we examine the evidence for the hypothesis that poverty may have particular psychological consequences that can lead to economic behaviors that make it difficult to escape poverty. The evidence indicates that poverty causes stress and negative affective states which in turn may lead to short-sighted and risk-averse decision-making, possibly by limiting attention and favoring habitual behaviors at the expense of goal-directed ones. Together, these relationships may constitute a feedback loop that contributes to the perpetuation of poverty. We conclude by pointing toward specific gaps in our knowledge and outlining poverty alleviation programs that this mechanism suggests.

More than 1.5 billion people in the world live on less than $1 a day (purchasing power parity in December 2013 dollars) (1). This lack of financial means has related to income; that is, poorer households were more likely to choose smaller and earlier monetary rewards over larger, delayed ones. Here, the potential reverse causality problem—that high incomes may cause low discount rates—was solved by using rainfall as an instrumental variable for income. Rainfall is significantly correlated with income, and on the assumption that it affects the discounting of future payoffs only through income it is a valid instrument. The IV estimates confirm the negative relationship between the discount rate and income, suggesting that poverty may causally affect time-discounting. In addition, the results show marginally more risk aversion in poorer participants.

Negative income shocks are a pervasive feature of the lives of the poor, and they are particularly vulnerable to these shocks because of limited access to credit markets (9, 10). It is therefore interesting to study the effect of negative income shocks on economic choice. In (11), subjects were randomly assigned to income shocks in a laboratory experiment after they had first earned some income in an effort task.
Can identity be protective?

But some psychological mechanisms can be protective – for example. Social identity (the sense of belonging).

Analyses of two separate samples:

1. CLAHRC-NWC survey (N = 4319).
2. Survey of Liverpool University students (N = 612)
Can identity be protective?

We found that a strong identification with current neighbourhood (not town of origin) protected against psychiatric symptoms (depression and paranoia) when people experienced financial distress.

The path from financial distress, through self-esteem to mental ill-health (depression, paranoia and anxiety) is moderated (blunted) in people who feel a strongly identify with their neighbourhood.
Identity and culture (Thomas et al 2017)

208 female students at Zayed University or Emirates College for Advanced Education:

Affective priming task

Primes were images related to Emirati and American culture (e.g. flags)
Targets were positive and negative affect words

Significant regression model: $F (2,205) = 4.98, p = .008$.

Both implicit in-group evaluations ($p = .019; \text{beta} = - .138$) and Arabic language dominance ($p = .048; \text{beta} = -.346$) were retained in the model.

The more students identified with American relative to Arab culture, and were competent in English, the more paranoid they were.
IV

Implications
Implications

1. Non-health policy interventions might have a larger effect than health interventions (analogous to fixing polluted water supplies that spread cholera).

2. These interventions should ideally be targeted at specific pathways or vectors.

3. For example, given the importance of incivilities in the deprivation-> paranoia-> depression pathway, could reducing incivilities improve neighbourhood mental health? (It would be an interesting experiment.)

4. For example, what could we do in deprived neighbourhoods to enhance the sense of belonging (social identity)?

5. Overshadowing many of these pathways are poverty, inequality and injustice.

John Snow (1813-1858), credited with tracing the Soho Cholera outbreak of 1854 to an infected pump.
Thanks for listening
Please tweet about the Conference

#GTiCP2019
Adverse impact of neighbourhood socioeconomic deprivation on psychological treatment outcomes: the role of area-level income and crime

Jaime Delgadillo
Socioeconomic deprivation and psychological care

Jaime Delgadillo, PhD
Poverty = ↑ distress, ↓ access, ↓ improvement

Figure 2: Variability in the prevalence of common mental disorders and access gap indices according to the index of multiple deprivation (IMD).
The Index of Multiple Deprivation

The IMD ranks each small area in England from:

1st most deprived area

32,844th least deprived area

32,844 small areas (called Lower-layer Super Output Areas) in England with an average of 1,500 residents each.

7 domains of deprivation included in the Index:

- Income: 22.5%
- Employment: 22.5%
- Education: 13.5%
- Health: 13.5%
- Crime: 9.3%
- Barriers to housing & services: 9.3%
- Living environment: 9.3%

Neighbourhood deprivation & treatment outcomes

*Psychotherapy Research*, 2019
https://doi.org/10.1080/10503307.2019.1649500

**Adverse impact of neighbourhood socioeconomic deprivation on psychological treatment outcomes: the role of area-level income and crime**

MEGAN FINEGAN¹, NICK FIRTH ², & JAIME DELGADILLO ³

**Question:** which specific aspects of neighbourhood deprivation influence treatment outcomes?

**Sample:** N=44,805 patients treated across 5 IAPT services

**Outcomes:** Post-treatment PHQ-9 and GAD-7 scores

**Analysis:** Regressions investigating IMD domains as predictors, controlling for patient-factors (symptom severity, age, employment, medications) and services
## Neighbourhood deprivation & treatment outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fully adjusted PHQ-9 Model</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Fully adjusted GAD-7 Model</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>F (16, 29714) = 1036.63, p &lt; .001</td>
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<td></td>
<td></td>
<td></td>
<td>F (16, 29711) = 862.17, p &lt; .001</td>
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<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>p</td>
<td>95% CI Low</td>
<td>95% CI High</td>
<td>VIF</td>
<td>B</td>
<td>SE</td>
<td>p</td>
<td>95% CI Low</td>
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<td>1.80</td>
<td>2.55</td>
<td></td>
<td>2.31</td>
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<td>&lt;.001</td>
<td>1.98</td>
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<tr>
<td>Income</td>
<td>-0.18</td>
<td>0.09</td>
<td>.04</td>
<td>-0.35</td>
<td>-0.01</td>
<td>6.91</td>
<td>6.96</td>
<td></td>
<td>-0.21</td>
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<td>Education</td>
<td>-0.06</td>
<td>0.07</td>
<td>.45</td>
<td>-0.20</td>
<td>0.09</td>
<td>4.72</td>
<td>4.67</td>
<td></td>
<td>-0.07</td>
<td>0.06</td>
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<td>Health &amp; Disability</td>
<td>-0.06</td>
<td>0.07</td>
<td>.37</td>
<td>-0.20</td>
<td>0.07</td>
<td>4.18</td>
<td>4.28</td>
<td></td>
<td>0.01</td>
<td>0.06</td>
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<tr>
<td>Crime</td>
<td>-0.15</td>
<td>0.05</td>
<td>&lt;.001</td>
<td>-0.25</td>
<td>-0.05</td>
<td>2.12</td>
<td>2.07</td>
<td></td>
<td>-0.11</td>
<td>0.04</td>
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<td>Age</td>
<td>-0.02</td>
<td>0.002</td>
<td>&lt;.001</td>
<td>-0.02</td>
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<td>Unemployed</td>
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<td>Ethnicity</td>
<td>0.71</td>
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<td>0.46</td>
<td>0.96</td>
<td>1.05</td>
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<td>Medications</td>
<td>0.41</td>
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<td>0.55</td>
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<td>1.11</td>
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<td>Baseline PHQ-9</td>
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<td>Baseline GAD-7</td>
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<td>Baseline WSAS</td>
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<td>0.10</td>
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<td>Treatment variables PHQ-9 model, blocks 1 + 2 + 3, $R^2 = 0.36$</td>
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<td>Service A</td>
<td>-0.18</td>
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<td>-0.45</td>
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<td>3.96</td>
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<td>-0.19</td>
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<tr>
<td>Service B</td>
<td>0.29</td>
<td>0.14</td>
<td>0.04</td>
<td>0.01</td>
<td>0.56</td>
<td>3.50</td>
<td>3.50</td>
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<td>Service D</td>
<td>-0.62</td>
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<td>-0.93</td>
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<td>2.83</td>
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<tr>
<td>Service E</td>
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<td>&lt;.001</td>
<td>-1.05</td>
<td>-0.46</td>
<td>2.69</td>
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<td>Sessions</td>
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<td>0.006</td>
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<td>-0.238</td>
<td>1.052</td>
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</tbody>
</table>

Note: B = regression coefficient; SE = standard error; CI = confidence intervals; VIF = variance inflation factor; $R^2$ = total variance explained by the model; Service C had the lowest mean IMD and was entered as a reference category.
Neighbourhood deprivation & treatment outcomes

Key findings

- Neighbourhood income and crime rates predicted ~5% of variability in depression & anxiety treatment outcomes

- This is comparable to therapist effects (~5%) and alliance (~7%)

- The influence of neighbourhood deprivation was significant even after controlling for individual employment status

Possible mechanisms

- Contingencies of material deprivation
- Contingencies of unsafe environment
- Upward social comparison
- Learned helplessness