Sticks and stones: The association between weight discrimination and mental and physical wellbeing

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Presenter Disclosures
Angela Meadows
The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationship to disclose

Weight stigma in daily life

- Bullying
- Legal
- Emergency
- Media
- Being 'Fat in Public'

MacCann & Roberts, 2013; Puhl & Heuer, 2009; Puhl et al, 2013a,b; Rudolph et al, 2009; Schvey et al, 2013; Swami et al, 2010
Stress and the body

- Stress response associated with hypertension, heart disease, T2DM, hypercholesterolaemia
  - HPA, cortisol and other glucocorticoids
  - Increase risk of obesity, especially visceral obesity
- Social stress has negative impact on health
  - E.g. Perceived racial discrimination or mistreatment associated with increased risk of coronary events, breast cancer, HTN, respiratory illnesses, glucose intolerance, high waist circumference (RR 2–6)


Correlates of weight stigma

<table>
<thead>
<tr>
<th>Actual / Perceived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reduced HRQoL</td>
</tr>
<tr>
<td>Mood &amp; anxiety disorders</td>
</tr>
<tr>
<td>Low self-esteem</td>
</tr>
<tr>
<td>Body dissatisfaction</td>
</tr>
<tr>
<td>Physical ill-health</td>
</tr>
<tr>
<td>May mediate association between BMI and health</td>
</tr>
<tr>
<td>Behavioural</td>
</tr>
<tr>
<td>Increased caloric intake</td>
</tr>
<tr>
<td>Binge eating and EDs</td>
</tr>
<tr>
<td>Avoidance of exercise</td>
</tr>
<tr>
<td>Social isolation</td>
</tr>
<tr>
<td>Avoidant coping strategies</td>
</tr>
<tr>
<td>Healthcare utilisation</td>
</tr>
<tr>
<td>- Preventive: reduced</td>
</tr>
<tr>
<td>- Emergent: increased</td>
</tr>
</tbody>
</table>


Internalised Weight Stigma

- Accept and believe societal anti-fat attitudes and stereotypes leading to self-devaluation
  - Related to but distinct from self-esteem, body image, anti-fat bias
- Reduced HRQoL, independent predictor of physical and mental health impairment
- Avoidant coping, more maladaptive behaviours, fewer health behaviours

Online study: “Life experiences of overweight individuals”

- Online recruitment via social media and forums
  - Diet, weight loss
  - Exercise, health and fitness
  - Plus-size fashion
  - Body image and size acceptance
- ‘Overweight’ adults, 18–69

Questionnaires

- Demographics, height and weight, dieting
- Eating behaviour
- Restriction of activities
- Body image and self-esteem
- Experienced and internalised weight stigma

Brown et al., 1990; Cash, 2000; Durso & Latner, 2008; Myers & Rosen, 1999; Quinn & Crocker, 1999; Robinson & Bacon, 1999; Rosenberg, 1979; Stice et al., 2000; van Strien et al., 1986

Participants

- N = 379, 88% female
- 71% White
- Mean BMI 36.8
  - SD 8.9, range 25.0–76.2
- Mean age 37.8 years
- Educated
  - 89% at least UG degree
  - 37% higher degree
- Employment
  - 57% white collar, 19% education, 7% unemployed

5.5% Europe
3.8% Canada
7.1% Oceania
45.4% USA
34.0% UK
21.1% Other

UK, 45.4%
Types of stigma: North America vs UK

- North American participants reported significantly higher frequency of all types of stigma experience except being physically attacked.
- However both anti-fat attitudes in general and internalised weight stigma were significantly higher in the UK (note, ‘OW/OB’ sample).
Partial correlations (controlling for BMI)

- No significant correlation with age, employment
- Nominal variable coding: Dieting (1=WL dieting, 2=Watching, 3=Not dieting); Gender (0=male, 1=female); Education (1=low to 6=high)

IWS=Internalised weight stigma, SSI=Stigmatising Situations Inventory, AFA=Anti-fat Attitudes, REACT=Restriction of activities.

Partial correlations (controlling for BMI & dieting)

- Nominal variable coding: BED (1=Yes, 0=No)
- No significant correlation with BN, BED diagnosis

DEBO=Dutch Eating Behaviour Questionnaire, BE3/6=Binge eating in previous 3/6 months, BED=Binge Eating Disorder (DSM-V), EDDS=Eating Disorders Diagnostic Survey.

Regression models (*Include age, gender, and BMI as covariates)

- Self-Esteem ✔ ✔ .51
- Appearance Evaluation ✔ - .64
- Exercise in public ✔ ✔ .31
- Eating in public ✔ ✔ .29
Regression models
(Include age, gender, BMI, and dieting as covariates)

<table>
<thead>
<tr>
<th></th>
<th>Internalised</th>
<th>Experienced</th>
<th>Full model $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restraint</td>
<td>✔</td>
<td>-</td>
<td>.42</td>
</tr>
<tr>
<td>External Eating</td>
<td>✔</td>
<td>✔</td>
<td>.19</td>
</tr>
<tr>
<td>Emotional Eating</td>
<td>✔</td>
<td>-</td>
<td>.28</td>
</tr>
<tr>
<td>Binge Eating 3m</td>
<td>✔</td>
<td>-</td>
<td>.19</td>
</tr>
<tr>
<td>Binge Eating 6m</td>
<td>✔</td>
<td>-</td>
<td>.21</td>
</tr>
<tr>
<td>EDDS Total</td>
<td>✔</td>
<td>✔</td>
<td>.53</td>
</tr>
</tbody>
</table>

- Coefficients: Internalised >> experienced stigma
- Internalised stigma more important in driving disordered eating

Mediation effects

<table>
<thead>
<tr>
<th></th>
<th>Experienced Stigma</th>
<th>Self-Esteem</th>
<th>Experienced Stigma</th>
<th>Self-Esteem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experienced Total Effect</td>
<td>Indirect Direct via IWS</td>
<td>Indirect BC/95%</td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>29.8</td>
<td>15.7</td>
<td>13.7</td>
<td>7.08, 20.61</td>
</tr>
<tr>
<td>Exercise in public</td>
<td>2.68</td>
<td>1.56</td>
<td>1.30</td>
<td>0.53, 1.78</td>
</tr>
<tr>
<td>Emotional Eating</td>
<td>1.54</td>
<td>0.74</td>
<td>0.50</td>
<td>0.40, 1.26</td>
</tr>
<tr>
<td>Binge Eating 3m</td>
<td>0.41</td>
<td>0.16</td>
<td>0.23</td>
<td>0.12, 0.38</td>
</tr>
<tr>
<td>EDDS Total</td>
<td>28.3</td>
<td>15.6</td>
<td>12.7</td>
<td>6.5, 20.8</td>
</tr>
</tbody>
</table>

Summary: Internalised vs Experienced stigma

- Internalised stigma crosses gender, BMI boundaries
- Only small correlation between experienced and internalised stigma
  - Experienced stigma common but not ubiquitous
  - Internalised stigma from fat-shaming environment?
- Internalised stigma significant driver of negative outcomes and mediates relationships with experienced stigma
Implications

• Targeting anti-fat bias not very successful
• Target internalisation?
  — Victim blaming?
  — May be partially protective
  — Mostly qualitative and anecdotal data
• Develop intervention and test effect on health and health behaviours

Weight Stigma Conference

Sign up for updates at: stigmaconference.com

Thanks

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Janelle Messenger, PhD
Catherine Womack, PhD
Regional distribution of sample (text)
- UK 45.4%
- USA 34.0%
- Canada 5.8%
- Oceania 7.1%
- Other Europe 5.5%
- Other 2.1%

Frequency of experienced stigma by region (text)
- Across all 11 domains measured by the Stigmatising Situations Inventory, North America and Europe reported the highest levels of stigma
  - 1.1 and 1.2 on a scale from 0=Never to 3=Multiple times
  - UK and Oceania averaged score of 0.7

Results: Experienced stigma (text)
- Women experienced more than men
- Over 90% received nasty comments from friends, family, colleagues, strangers
- Over 80% experienced stigma in healthcare settings
- Over one-quarter in employment settings
- Being stared at, physical barriers common
- 10% physically attacked, 6% more than once
Results: Partial Correlations: Experienced Stigma (text)

- Not correlated with age, employment, dieting, or anti-fat attitudes
- Strong correlation with BMI, $r = .56$ and gender, $r = .26$ (both $p < .001$)
- Controlling for BMI, negatively correlated with self-esteem, appearance evaluation, avoidance of exercising and eating in public

Results: Partial Correlations: Internalised Stigma (text)

- Not correlated with BMI or gender
- Strong correlation with all other measures in expected directions; all correlations stronger than for experienced stigma
- Only moderate correlation between experienced and internalised weight stigma ($r = .20$, $p < .001$)

Results: Partial Correlations: Eating Behaviour (text)

- Experienced and internalised weight stigma both significantly correlated with restrained, external and emotional eating, and symptom scores on the Eating Disorders Diagnostic Scale. Correlations larger for internalised.
- Binge eating behaviour only correlated with internalised stigma
Results: Regression Models (text)

- Regression model included age, gender, and BMI as covariates.
- Internalised and experienced stigma were significant predictors of restriction of public activities (R-squared exercise .31, eating) and self-esteem (R-squared .51).
- Experienced stigma not significant predictor of appearance evaluation but model R-squared = .64.

Results: Regression Models – eating behaviours (text)

- Regression model included age, gender, BMI, and dieting as covariates.
- Internalised stigma was significant predictors of all outcomes. Experience stigma significant predictor of external eating and EDDS symptom score.
- Total model R-squared (from top to bottom): Restrained .42, External .19, Emotional .28, Binge Eating in previous 3 months .19, 6 months .21, EDDS symptom scores .53.

Results: Mediation effects (text)

- Total effects of experienced stigma on all outcomes at least partially mediated via internalised weight stigma.
- After controlling for internalised stigma, direct effects of experienced stigma on appearance evaluation, dietary restraint, emotional eating, and binge eating became non-significant.
### Types of Stigma Experience: North America vs UK

<table>
<thead>
<tr>
<th>Category</th>
<th>North America</th>
<th>UK</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasty comments from family</td>
<td>1.107</td>
<td>0.852</td>
<td>.006</td>
</tr>
<tr>
<td>Loved ones embarrassed</td>
<td>0.984</td>
<td>0.727</td>
<td>.020</td>
</tr>
<tr>
<td>Nasty comments from children</td>
<td>1.383</td>
<td>1.067</td>
<td>.010</td>
</tr>
<tr>
<td>Nasty comments from others</td>
<td>1.305</td>
<td>0.849</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Being excluded</td>
<td>1.195</td>
<td>0.864</td>
<td>.021</td>
</tr>
<tr>
<td>People making assumptions</td>
<td>1.526</td>
<td>0.991</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Being stared/pointed at</td>
<td>0.870</td>
<td>0.501</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Inappropriate comments from doctors</td>
<td>1.471</td>
<td>0.988</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Employment settings</td>
<td>0.459</td>
<td>0.187</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Physical barriers</td>
<td>0.956</td>
<td>0.471</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>