The Recovery Measurement Tool: Preliminary analysis of an instrument to measure Recovery

P. Antonio Olmos-Gallo
Kate DeRoche
Cecilia Richey

We like to thank Donald Sammons, Charles Leon, and the Consumer Survey Team
Overview

- How we got to work in this collaboration with the Recovery Advisory Group
- The Recovery Advisory Group Recovery Model
  - Model proposal
  - Model Description
  - Development of the model
- Testing of the model
  - Theory-based
  - Data-based
  - Rasch models
- Comparison to our instruments
  - CRM and RMI
- General Comments and Next steps
How we got to work in this collaboration with the Recovery Advisory Group
The Recovery Advisory Group Recovery Model
Dr. Ralph and a group of 13 consumer leaders had monthly teleconferences to review the literature and develop the basic sense of the model. Based on those teleconferences the group developed the Recovery Advisory Group Recovery Model (RAGRM).
Stages in the RAGRM

- The model assumed that consumers can go through several stages
  - Anguish
  - Awakening
  - Insight
  - Action Plan
  - Determined commitment to be well
  - Wellbeing, Empowerment, Recovery
Recovery Advisory Group
Recovery Model

Anguish

Wellbeing
Recovery
Empowerment

Determination
to be well

Action
Plan

Awakening

Insight
Key Characteristics of the RAGRM

- All the stages are connected to each other, so “there can be both forward and backward movement along the recovery journey”

- Moreover, “… the final stage, Wellbeing, can be reached directly without going through all the stages”
The stages can be broadly organized into two major areas:

- **External**
  - Activity
  - Self-care
  - Social Relations
  - Social Support

- **Internal**
  - Cognitive
  - Emotional
  - Spiritual
  - Physical
Examples of some of the items

- **Cognitive**
  - I don’t think there is anything good in my life

- **Emotional**
  - I feel confused

- **Spiritual**
  - I feel hopeless

- **Physical**
  - There is a basis for my pain
Examples (cont)

 Activity
  – No one would hire me to work for them

 Self-care
  – When I take care of myself I feel better

 Social Relation
  – I need to make a connection with people

 Social Support
  – I will ask for help from others
A different group of consumers decided on the creation of items

- Creation of individual items
- Deciding under what category they will fit
- Deciding on a 1 to 5 scale
  - (1) Not at all like me to (5) Very much like me
- Addition of a NA option
According to the Recovery Advisory Group directions, Consumer’s responses should reflect the stage the consumers are at.
- Consumers answer items from all stages

Therefore, their Recovery Score will be the score for all 87 items.
Long-term plans for the RAGRM

- Given that the instrument is too long, the long term plan is to test the instrument with a large group of consumers
  - Test how well the instrument reflects the underlying theory
  - Make a new version of the instrument that will be shorter
Additional goal

Since we have access to recovery information through our own instruments, we can see how well the RAGRM correlates with MHCD’s instruments (validation of the RAGRM)

– Correlations between RAGRM and the Consumer Recovery Measure (CRM)
– Correlations between RAGRM and the Recovery Markers Inventory (RMI)
Testing the Recovery Advisory Group Recovery Model
Some general methods

- Collected information on 287 unique consumers
- Due to a transcription error, the final instrument included 87 items (including the “stages of recovery” question)

Which stage is closest to where you are today in your own recovery journey? Anguish, awakening, insight, action plan, determined commitment, wellbeing
Research Questions

✦ Does the RAGRM instrument measure the 8 hypothesized domains of recovery?
  – Cognitive, Emotional, Spiritual, Physical, Activity, Self-Care, Social Relations, & Social Support

✦ Does the RAGRM instrument measure the six suggested stages of recovery?
  – Anguish, Awakening, Insight, Action Plan, Determination to be well, Well-being Empowerment
Methods

- Conducted CFA to estimate if the items measured the hypothesized traits
  - To examine the domains of recovery
  - To examine the stages of recovery
- Conducted EFA to estimate how the data matches the model
  - Determine if the data seems to support some similarity among the items intended to measure the same domain/stage
Domains of Recovery: CFA

- Cognitive
- Emotional
- Spiritual
- Physical
- Activity
- Selfcare
- Soc Relat
- Soc Supp

Recovery
Domains of Recovery: CFA

- The CFA results suggest that RAGRM does not measure 8 separate domains of recovery
  - Models would not converge i.e., there are major discrepancies between the hypothesized model and the data
- Could be related to large amounts of missing data and small sample size (large number of items with NA)
Stages of Recovery: CFA

Recovery → Anguish
Recovery → Awakening
Recovery → Insight
Recovery → Ac. Plan
Recovery → Determination
Recovery → Wellbeing
Stages of Recovery: CFA

- The CFA results suggest that the RAGRM does not measure 6 separate stages of recovery
  - Models would not converge i.e., there are major discrepancies between the hypothesized model and the data
- Once more, it could be related to large amounts of missing data and small sample size (large number of items with NA)
**Exploratory Factor Analysis**

- Given that the model as intended did not seem to work, we let the “data speak”

- Exploratory Factor analysis using several criteria
  - Let the data dictate the number of factors
  - Force the model to have only 8 factors (to match the number of domains)
  - Force the model to have only 6 factors (to match the number of stages)
EFA: Model 1

- Let the data determine the number of factors. Independent Factors
  - Analysis suggested 20 factors
    • Explaining 78.40% of the total variance.
  - However, a different criteria suggested that a more meaningful number was 4-5
    • Explained only 43.93% of the total variance.
EFA: Model 1

- **Factor 1**: Social Relation (11), Activity (7), Self Care (5), Cognitive (4), Emotional (4), Social Support (4), Spiritual (2), and Physical (2).
- **Factor 2**: Social Relation (3), Emotional (3), Cognitive (2), Spiritual (2), Social Support (1), Self-care (1) and Physical (1).
- **Factor 3**: Social Relation (3), Social Support (1), Self-care (1).
- **Factor 4**: Emotional (1), Physical (1), Self-care (1) and Social Support (1).
EFA: Model 2

- Force the model to have only 8 factors (to match the number of domains)
  - 8 factors explained only 59.13% of the variance.
  - Assuming some level of correlation (oblimin rotation), 8 factors could be identified
EFA: Model 2

- **Factor 1**: Self-care (2), Social Relation (2), Cognitive (1) and Social Support (1).
- **Factor 2**: Activity (3), Spiritual (2), Cognitive (2), Self-care (1), Social Support (1) and Emotional (1).
- **Factor 3**: Social Relation (4), Activity (3), Social Support (1), Spirituality (1) and Emotional (1).
- **Factor 4**: Social Support (6), Spirituality (1), Emotional (1) and Physical (1).
- **Factor 5**: Social Support (3), Cognitive (1) and Physical (1).
- **Factor 6**: Activity (3), Social Support (2), Self-care (2), Physical (1), Emotional (1), and Social Relation (1).
- **Factor 7**: Social Relation (6), Spirituality (1), Activity (1), and Emotional (1).
- **Factor 8**: Social Relation (2), Physical (2), Emotional (2), and Social Support (1).
EFA: Model 3

- Force the model to have only 6 factors (to match the number of stages)
  - 6 factors explained a total of 53.96% of the total variance.
  - Assuming some level of correlation (oblimin rotation), 5 factors could be identified
EFA: Model 3

- **Factor 1:** Determination to be well (9), Insight (6), Awakening (5), Well Being (3) and Action Plan (3).
- **Factor 2:** Anguish (14).
- **Factor 3:** Well-being (3), Determination to be well (2), Action plan (1) and Anguish (1).
- **Factor 4:** Action plan (3), Awakening (2), Insight (2), Determination to be well (2) and Well-being (1).
- **Factor 5:** Well-being (5), Insight (1), Anguish (1), and Action Plan (1).
Conclusions Factor Analyses

✦ Neither the CFA, or the EFA did demonstrate the structure suggested by the model
✦ There may be many reasons:
  – Lots of missing values reduced the total number of subjects
  – Some of the questions may need some rewriting
Rasch Analysis
Conducted Rasch Analysis to determine if the ordering of item difficulty matches the hypothesized stages

- Separately for each domain of recovery
- Also, for each stage of recovery
Domains of Recovery

- Based on the Rasch analysis, the only domains that can be accurately measured by the RAGRM are **Social Relations** and **Social Support**
- The Recovery Advisory Group should re-evaluate the questions in the remaining 6 areas because they are not reliable or valid measure of the traits
## Domains of Recovery: Rasch

<table>
<thead>
<tr>
<th>Social Relations</th>
<th>Separation</th>
<th>Reliability</th>
<th>Person</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td>Separation</td>
<td>Reliability</td>
<td>Person</td>
<td>Item</td>
</tr>
<tr>
<td></td>
<td>1.73</td>
<td>.75</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.24</td>
<td>.96</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.45</td>
<td>.68</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.16</td>
<td>.99</td>
<td>Good</td>
<td></td>
</tr>
</tbody>
</table>
## Domains of Recovery: Rasch

<table>
<thead>
<tr>
<th></th>
<th>Cognitive</th>
<th>Emotional</th>
<th>Spiritual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Separation</td>
<td>Reliability</td>
<td>Separation</td>
</tr>
<tr>
<td>Person</td>
<td>.68</td>
<td>.32</td>
<td>.90</td>
</tr>
<tr>
<td>Item</td>
<td>9.68</td>
<td>.99</td>
<td>7.28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bad</td>
<td></td>
</tr>
</tbody>
</table>
## Domains of Recovery: Rasch

<table>
<thead>
<tr>
<th></th>
<th>Separation</th>
<th>Reliability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person</td>
<td>.72</td>
<td>.34</td>
<td>Bad</td>
</tr>
<tr>
<td>Item</td>
<td>5.24</td>
<td>.96</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person</td>
<td>1.05</td>
<td>.52</td>
<td>Bad</td>
</tr>
<tr>
<td>Item</td>
<td>8.06</td>
<td>.98</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Self-Care</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person</td>
<td>1.11</td>
<td>.55</td>
<td>Bad</td>
</tr>
<tr>
<td>Item</td>
<td>8.67</td>
<td>.99</td>
<td>Good</td>
</tr>
</tbody>
</table>
For the Stages of Recovery model, both Rasch and CFA analysis shown that some items do not order as hypothesized. These items should be reviewed and the stage portion of the model should be re-evaluated.
## Stages of Recovery: Rasch

<table>
<thead>
<tr>
<th>Domain</th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Wellbeing Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive</strong></td>
<td>1 84</td>
<td>15</td>
<td>43</td>
<td></td>
<td>34 60</td>
<td>13 69</td>
</tr>
<tr>
<td>Model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>1 84</td>
<td>15</td>
<td>43</td>
<td>34 60</td>
<td>13 69</td>
<td></td>
</tr>
<tr>
<td>(order of difficulty)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Emotional</strong></td>
<td>14 25</td>
<td>78 20 57</td>
<td>2</td>
<td>21 33</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>Model</td>
<td>14 25</td>
<td>78 20 57</td>
<td>2</td>
<td>21 33</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>14 25</td>
<td>78 20 57</td>
<td>2</td>
<td>21 33</td>
<td>28</td>
<td>24</td>
</tr>
</tbody>
</table>
### Stages of Recovery: Rasch

<table>
<thead>
<tr>
<th>Spiritual Domain</th>
<th>RAGRM Model</th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Well-being Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rasch Analysis</td>
<td>19</td>
<td>85</td>
<td>5</td>
<td>50</td>
<td>16</td>
<td>87</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Domain</th>
<th>RAGRM Model</th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Well-being Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rasch Analysis</td>
<td>9</td>
<td>71</td>
<td>32</td>
<td>3</td>
<td>79</td>
<td>37</td>
<td>17</td>
</tr>
</tbody>
</table>
# Stages of Recovery: Rasch

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Well-being Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active Domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAGRM Model</td>
<td>80 45</td>
<td>75 62</td>
<td>31 72</td>
<td>4 63</td>
<td>27</td>
<td>23 77</td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>62 80</td>
<td>73 45</td>
<td>18 23</td>
<td>63 27</td>
<td>77 31</td>
<td>4 72</td>
</tr>
<tr>
<td><strong>Self-Care Domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAGRM Model</td>
<td>30 49</td>
<td>81</td>
<td>44</td>
<td>6</td>
<td>38 64 70</td>
<td>75</td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>30 49</td>
<td>81</td>
<td>38</td>
<td>6 64</td>
<td>70 35</td>
<td>44</td>
</tr>
</tbody>
</table>
## Stages of Recovery: Rasch

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Well-being Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Relations Domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAGRM Model</td>
<td>36 54 66</td>
<td>86 42 51 65</td>
<td>58 68</td>
<td>10 82 76</td>
<td>7 56 65 74</td>
<td>83 46</td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>36 66 7</td>
<td>54 10 82</td>
<td>68 86 56 65</td>
<td>42 74 82 58</td>
<td>76 46 51</td>
<td></td>
</tr>
<tr>
<td><strong>Social Support Domain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAGRM Model</td>
<td>41 39 40</td>
<td>26</td>
<td>75 55 67</td>
<td>22 59</td>
<td>11 12</td>
<td>8 48 53 61 78</td>
</tr>
<tr>
<td>Rasch Analysis</td>
<td>39 41 40</td>
<td>53 8 55 78 59</td>
<td>48 12 61 22 11 26</td>
<td>75 67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*MHCD: Enriching Lives and Minds*
Correlation analysis

- We were also interested to see how well the RAGRM and our recovery instruments correlated with each other.
- This part of the analysis should be considered exploratory at this point, since the RAGRM is not working as expected.
Correlations between RAGRM and the CRM

- We ran correlations between the Consumer Recovery Measure (Consumer’s perception of their own recovery) and the RAGRM.

- We ran correlations using two versions of the RAGRM-Stages approach:
  - As suggested by the Recovery Advisory Group model
  - As suggested by the Rasch Analysis
### Correlations RAGRM-CRM

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Wellbeing Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRM</strong></td>
<td>-0.214*</td>
<td>0.244*</td>
<td>0.499**</td>
<td>0.585**</td>
<td>0.574**</td>
<td>0.576**</td>
</tr>
</tbody>
</table>

- **n = 91; *p < 0.05; **p < 0.01**

- **We see strong correlations between all the stages and the Consumer Recovery Measure**

- **Very interesting that the relation between Anguish and the CRM is negative**

- **The correlation seems to strengthen as we move further in the stages of recovery scale (toward Wellbeing)**
### Correlations RM-Rasch-CRM

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Wellbeing Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRM</td>
<td>-0.214*</td>
<td>0.041</td>
<td>0.313**</td>
<td>0.483**</td>
<td>0.530**</td>
<td>0.465**</td>
</tr>
</tbody>
</table>

n = 91; *p < 0.05; **p < 0.01

- Not very different from what we saw before: Strong correlations between stages and the CRM
- Relation between **Anguish** and the CRM is still negative
- Correlations still seem to strengthen as we move further in the stages of recovery scale (toward Wellbeing)
Correlations RAGRM-RMI

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Wellbeing Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMI</td>
<td>-0.034</td>
<td>0.058</td>
<td>0.172</td>
<td>0.082</td>
<td>0.114</td>
<td>0.101</td>
</tr>
</tbody>
</table>

n = 104; *p < 0.05; **p < 0.01

- There are no significant correlations between the Stages and the Recovery Markers Inventory
- We could speak about a trend toward a positive relation between **Insight** and the RMI (p = 0.079)
### Correlations RM-Rasch-RMI

<table>
<thead>
<tr>
<th></th>
<th>Anguish</th>
<th>Awakening</th>
<th>Insight</th>
<th>Action Plan</th>
<th>Determination to be well</th>
<th>Wellbeing Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMI</td>
<td>-0.034</td>
<td>0.037</td>
<td>0.162</td>
<td>0.025</td>
<td>0.094</td>
<td>0.113</td>
</tr>
</tbody>
</table>

- Once more we see no significant correlations between the Stages (Rasch-version) and the Recovery Markers Inventory
- Once more, we can speak about a trend toward a positive relation between **Insight** and the RMI (p = 0.095)

n = 105; *p < 0.05; **p < 0.01
General Comments
and
Next Steps
The Recovery model as envisioned by the Recovery Advisory Group has many nice features that are worth exploring
– Based on Research literature and life experiences of many consumers

Relationship between Stages of Recovery and CRM matches nicely with predictions made by the Recovery Advisory Group
Some issues with the RAGRM

★ Problems with the NA (Not Applicable) Option

- Every question has at least 4 people who select this option ranging up to 77 participants on some items
- It is not necessary, participants should select the option of “not at all like me”
- Causes lot of problems with scoring
For most of the items, we could even remove “not very much like me” and “quite a bit like me”, since they did not help much

– The next graph is typical of what we found in terms of the response distribution
1. Q1 I don’t think there is anything good in my life

Category Probability

Measure relative to item difficulty

-3 -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
Suggestions from MHCD

❖ Reconsider whether the questionnaire needs a NA option
  – Consumers who feel an item do not fits them, could answer “Not at all like me”

❖ Reconsider whether the questionnaire needs 5 options
  – Rasch analyses show that most of the answers concentrated in 3 options:
    • Not at all like me
    • Somewhat like me, and
    • Very much like me
Suggestions from MHCD

- Work on some of the items
  - Despite the fact that the model seems very strong, many of the items did not match the constructs very well
  - E.g., “I am hurting for a reason” is in the physical domain. However, there is no direct reference to physical pain
  - “I feel hopeless” is in the spiritual domain. Is this really a spiritual item?
Suggestions (cont)

- Once items are rewritten, collect new round of data
  - Based on some of the preliminary results, perhaps try to contact other centers (i.e., Fort Logan or Pueblo) to expand the sample to include individuals at different stages of recovery
  - Similarly, perhaps try larger group of consumers with a single episode (not acute)
Antonio Olmos
Antonio.Olmos@mhcd.org
Kate DeRoche
Kathryn.Deroche@mhcd.org
Cecilia Richey
Cecilia.richey@mhcd.org
You can find this presentation at our website
http://www.outcomesmhcd.com