Wraparound fidelity in systems of care and association with outcomes

*Results of the National Wraparound Comparison Study*

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Previous research on service factors predicting child and family outcomes

- Significant but weak association between generic measures of service quality and outcomes
  - Therapeutic alliance, Parent involvement, Child and adolescent satisfaction (Noser & Bickman, 2000)
  - Adherence to national standards for treatment foster care (Farmer et al., 2003)

- Greater evidence for association between fidelity to specific treatment models and outcome
  - MST (Henggeler et al., 1997)
  - School-based prevention programs (Greenberg et al., 2001)
  - ACT (McHugo et al., 1999)
Previous research on service factors predicting child and family outcomes

- Previous research has found associations between adherence to wraparound principles and child and family outcomes
  - Associations for individual families within one system of care (Bruns et al., 2005; Hagen et al., 2002)
  - Families served by wrap facilitators showing greater adherence found to have better outcomes on
    » Child functioning, Child behavior, School outcomes, Family resources
- Other studies found no relationship (e.g., Ogles et al., 2006)
  - However, variation in fidelity found to be limited (.96; sd = .04)
A theory of change for wraparound: Overview

**Ten principles of the wraparound process**

**A high-fidelity wraparound process** that is “true” to the values and the practice model and characterized by:
- Respect for values, culture, expertise
- Blending perspectives
- Family-driven, youth guided goal structure and decisions
- Opportunities for choice
- Evaluation of strategies
- Recognition/Celebration of success

**Phases and Activities of the Wraparound Process**

**Short term outcomes:**
- Follow-through on team decisions
- Service/support strategies that “fit”
- Service/support strategies based on strengths
- Improved service coordination
- High satisfaction with/engagement in wraparound
- Experiences of efficacy and success

**Intermediate outcomes:**
- Services and supports are more effective and “work” better for youth and families
- Increased social support and community integration
- Improved coping and problem solving
- Enhanced self-efficacy, empowerment, optimism, self-esteem
- Achievement of team goals

**Long term outcomes:**
- Stable, home-like placements
- Improved mental health outcomes (youth and caregiver)
- Improved functioning in school/vocation and community
- Achievement of team mission
- Increased assets
- Improved resilience and quality of life
Wraparound elements (Burns & Goldman, 1999)

- Parent and Youth Voice and Choice
- Youth and Family Team
- Community-based Services and Supports
- Cultural Competence
- Individualized Services and Supports
- Strength-based Services and Supports
- Natural Supports
- Continuation of Care
- Collaboration
- Flexible Resources and Funding
- Outcome-based Services and Supports
Several published studies have found associations between wraparound fidelity (or components of studies) and outcomes

- However, findings have been mixed in other system-of-care communities
- No studies have simultaneously employed:
  » Multiple sites
  » Large Ns
  » Full range of validated outcome measures
  » Measures of services received
- No studies have assessed site level fidelity and association with outcomes
Wraparound Comparison Study
*A component of the National CMHS Evaluation*

◆ **Research questions:**

1. How does the adherence to wraparound elements vary across CMHS-funded sites?

2. How do child and family outcomes vary between CMHS-funded sites with different adherence to wraparound?

3. Across individual families (in all study sites), what is the relationship between Wraparound fidelity, services received, and client outcomes?
Wraparound Comparison Study

◆ **Site selection criteria**
  - Differences in level of wraparound implementation and supports (WFI-Program Administrator form; WFI-PA)
  - Similarities with respect to demographics of families served
  - Rate of enrollment into national evaluation
  - Willingness to participate

◆ **Three sites ultimately selected to participate**
Wraparound Comparison Study

**Measures**

- Services received (Multi-Sector Services Checklist)
- Family and youth satisfaction (FSQ, YSQ)
- National evaluation outcome measures
  - Residential restrictiveness and placement changes
  - Child functioning (Child and Adolescent Functional Assessment Scale)
  - Child behavior (Child Behavior Checklist/4-18, Youth Self Report, Behavioral and Emotional Rating Scale)
  - Family Functioning (Family Assessment Device – General Functioning Scale)
  - Caregiver Strain Questionnaire
  - Family Resources (Family Resource Scale)
- Wraparound Fidelity Index 3.0
  - Caregiver, Facilitator, and Youth forms
Wraparound Fidelity Index, version 3

• Found to possess good psychometric characteristics
  • Test-retest reliability
  • Inter-rater agreement
  • Internal consistency
• Validity has been established through studies showing
  • Agreement with external experts’ assessment
  • Correlation with child and family outcomes
  • Correlation with measures of system support for wraparound
  • Discrimination between Wrap and non-wrap groups
  • Improvements in scores for providers over course of receiving quality improvement activities (e.g., training and coaching)
Data Collection

- **Study enrollment:** January 2004 – October 2005
- **WFI Data collection:** March 2004 – January 2006
- **Outcome measure collected via the national evaluation at baseline, 6-months, and 12-months.**
- **WFI data collection**
  - Families enrolled in national evaluation during study period recruited by local evaluators to participate in WFI-3 interview and signed consent to contact form.
  - Each family was contacted by a WERT member for the interview six months after entry into services and an attempt was made to contact the family twelve months after entry into services.
  - Caregivers and youths who participated in the WFI received $20 compensation, youth received $10.
  - Majority of interviews administered by phone.
## Wraparound Fidelity Index 3.0

*Respondent Scheme, by element*

<table>
<thead>
<tr>
<th>Element</th>
<th>Resource Facilitator</th>
<th>Parent</th>
<th>Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent/Youth Voice and Choice</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Youth and Family Team</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Community-based Svs/Suppts</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Cultural Competence</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Individualized Svs/Suppts</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Strength-based Svs/Suppts</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Natural Supports</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Continuation of Care</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Collaboration</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Flexible Resources/Funding</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Outcome-based Svs/Suppts</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Total Items**

<table>
<thead>
<tr>
<th></th>
<th>Resource Facilitator</th>
<th>Parent</th>
<th>Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
<td>44</td>
<td>32</td>
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*0-2 scale = Element Scores Range*

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<tr>
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<tbody>
<tr>
<td></td>
<td>0-8</td>
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</tbody>
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*0-2 scale = Element Scores Range*
Participants

- **Baseline**
  - N = 121 total families from 3 CMHS-funded Systems of Care national evaluation sites in 3 states

- **Six-Month Follow-up**
  - N = 93 total families
    - N=93 Facilitator interviews
    - N=84 caregiver interviews
    - N=42 youth interviews

- **Twelve-Month Follow-up**
  - N=56 total families
    - N=25 Facilitator interviews
    - N=22 caregiver interviews
    - N=9 youth interviews
### Baseline Demographic Information (total N=121)

<table>
<thead>
<tr>
<th></th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N=62  51%</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mean age</strong></td>
<td>12.8</td>
<td>11.8</td>
<td>11.8</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>29</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>White</td>
<td>27</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Other or Missing</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hispanic Ethnicity</td>
<td>3</td>
<td>2</td>
<td>3</td>
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<tr>
<td><strong>Custody Status</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Parental (birth or adoptive)</td>
<td>38</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>Other Relative</td>
<td>4</td>
<td>5</td>
<td>0</td>
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<tr>
<td>Ward of the State</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01*
## Results:
Missing data (total \(N=121\))

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td><strong>Baseline</strong></td>
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</tr>
<tr>
<td>Any Outcome Measure</td>
<td>25</td>
<td>21%</td>
</tr>
<tr>
<td><strong>Six-Month Follow-up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Outcome Measure</td>
<td>47</td>
<td>39%</td>
</tr>
<tr>
<td>WFI</td>
<td>8</td>
<td>7%</td>
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<tr>
<td>** Twelve-Month Follow-up**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Outcome Measure</td>
<td>71</td>
<td>59%</td>
</tr>
<tr>
<td>WFI</td>
<td>83</td>
<td>69%</td>
</tr>
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</table>
Research question 1: Between-site differences on WFI-3

<table>
<thead>
<tr>
<th>Site</th>
<th>N</th>
<th>Facilitator</th>
<th>Caregiver</th>
<th>Youth</th>
<th>Overall WFI***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 (N=62)</td>
<td>62</td>
<td>82.1</td>
<td>78.1</td>
<td>79.7</td>
<td>81.7</td>
</tr>
<tr>
<td>Site 2 (N=38)</td>
<td>38</td>
<td>79.9</td>
<td>72.1*</td>
<td>64.5**</td>
<td>67.3</td>
</tr>
<tr>
<td>Site 3 (N=21)</td>
<td>21</td>
<td>80.1</td>
<td>76.5</td>
<td>84.3</td>
<td>83.3</td>
</tr>
</tbody>
</table>

***Overall WFI score combines all 3 respondents; only calculated for cases with all 3 respondents
**p<.01
*p<.1
Decisions on Research questions 2 and 3

- **Research question 2:** How do child and family outcomes vary between CMHS-funded sites with different adherence to wraparound?
  - Between-site comparisons restricted to Sites 1 and 2 due to Site 3’s low Ns and comparable WFI-3 scores to site 1
  
  » **Hypothesis:** Based on trends in WFI data, Site 1 will demonstrate better outcomes than Site 2

- **Research question 3:** Across individual families (in all study sites), what is the relationship between Wraparound fidelity, services received, and client outcomes?
  - Families from all three sites retained in cross-site analysis of association between WFI-3 scores and outcomes
  - First WFI assessment used as fidelity measure
Results: Between site differences on Service use (MSSC total services received)

<table>
<thead>
<tr>
<th>Time</th>
<th>Site 1 (n=36)</th>
<th>Site 2 (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mos</td>
<td>6.72 **</td>
<td>4.74</td>
</tr>
<tr>
<td>12 mos</td>
<td>7.25 *</td>
<td>4.62</td>
</tr>
</tbody>
</table>

* **p<.001  
  * p<.05
Results: Between site differences on Caregiver satisfaction

**p<.01**
Results: Between site differences on Restrictiveness of Living Environment (ROLES)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 mos</th>
<th></th>
<th>Baseline</th>
<th>12 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 (n=31)</td>
<td>4.06</td>
<td>3.27*</td>
<td>Site 1 (n=18)</td>
<td>4.31</td>
<td>2.71</td>
</tr>
<tr>
<td>Site 2 (n=20)</td>
<td>2.46</td>
<td>2.82</td>
<td>Site 2 (n=11)</td>
<td>2.01</td>
<td>1.98</td>
</tr>
</tbody>
</table>

*p < .05
Results: Between site differences on Placement changes

<table>
<thead>
<tr>
<th>Site</th>
<th>Baseline</th>
<th>6 mos</th>
<th>12 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 (n=37)</td>
<td>2.41</td>
<td>1.45*</td>
<td>2.46</td>
</tr>
<tr>
<td>Site 2 (n=25)</td>
<td>1.44</td>
<td>1.44</td>
<td>1.27</td>
</tr>
</tbody>
</table>

* *p<.05*
## Results: Family Assessment Device, general functioning scale

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site 1</strong> (n=36)</td>
<td>2.95</td>
<td>3.11 **</td>
</tr>
<tr>
<td><strong>Site 2</strong> (n=25)</td>
<td>2.95</td>
<td>2.87</td>
</tr>
</tbody>
</table>

**p<.05
*p<.1

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site 1</strong> (n=24)</td>
<td>3.02</td>
<td>3.22 *</td>
</tr>
<tr>
<td><strong>Site 2</strong> (n=15)</td>
<td>3.01</td>
<td>2.93</td>
</tr>
</tbody>
</table>

**p<.05
*p<.1
Results: Between site differences on Child functioning

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 mos</th>
<th>12 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 (n=37)</td>
<td>133</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Site 2 (n=25)</td>
<td>105</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Site 1 (n=24)</td>
<td>130</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Site 2 (n=15)</td>
<td>123</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>
Results: Between site differences on Child behavior (CBCL/4-18)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 mos</th>
<th></th>
<th>Baseline</th>
<th>12 mos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site 1</strong> (n=36)</td>
<td>71.4</td>
<td>68.2</td>
<td><strong>Site 1</strong> (n=24)</td>
<td>69.4</td>
<td>66.4</td>
</tr>
<tr>
<td><strong>Site 2</strong> (n=25)</td>
<td>70.8</td>
<td>65.5</td>
<td><strong>Site 2</strong> (n=15)</td>
<td>74.5</td>
<td>68.6</td>
</tr>
</tbody>
</table>
Summary of between-site differences

- Significant differences
  - Total services received
  - Caregiver satisfaction
  - Restrictiveness of living environment
  - Placement changes
  - Family functioning

- No differences found
  - Child functioning
  - Child behavior (CBCL or YSR)
  - Behavioral strengths
  - Caregiver strain
  - Family resources
  - Youth satisfaction

- All differences in the hypothesized direction
Results: Association between CG-reported wraparound fidelity and 6-month outcomes

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>B</th>
<th>SE</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrictiveness of Living</td>
<td>-.294</td>
<td>.177</td>
<td>-.196</td>
<td>-1.658*</td>
<td>0.10</td>
</tr>
<tr>
<td>Placement changes</td>
<td>-.005</td>
<td>.071</td>
<td>-.008</td>
<td>-0.067</td>
<td>.947</td>
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<tr>
<td>CAFAS</td>
<td>-0.78</td>
<td>3.32</td>
<td>-0.02</td>
<td>-0.23</td>
<td>0.82</td>
</tr>
<tr>
<td>CBCL</td>
<td>-0.84</td>
<td>0.58</td>
<td>-0.12</td>
<td>-1.46</td>
<td>0.15</td>
</tr>
<tr>
<td>YSR</td>
<td>-1.00</td>
<td>1.12</td>
<td>-0.09</td>
<td>-0.89</td>
<td>0.38</td>
</tr>
<tr>
<td>BERS</td>
<td>1.32</td>
<td>1.05</td>
<td>0.15</td>
<td>1.26</td>
<td>0.21</td>
</tr>
<tr>
<td>Family Functioning</td>
<td>0.05</td>
<td>0.04</td>
<td>0.13</td>
<td>1.24</td>
<td>0.22</td>
</tr>
<tr>
<td>Caregiver Strain</td>
<td>-0.10</td>
<td>0.07</td>
<td>-0.14</td>
<td>-1.48</td>
<td>0.14</td>
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<tr>
<td>Family Resources</td>
<td>3.27</td>
<td>1.22</td>
<td>0.24</td>
<td>2.68**</td>
<td>0.01</td>
</tr>
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</table>

After controlling for baseline score

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>r</th>
<th>Sig.</th>
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<tbody>
<tr>
<td>MSSC Total</td>
<td>.08</td>
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</tr>
<tr>
<td>Caregiver Satisfaction</td>
<td>.56**</td>
<td>.000</td>
</tr>
<tr>
<td>Youth Satisfaction</td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

**p<.01    *p<.1
Summary of other analyses of association between wrap fidelity and outcomes

- Facilitator WFI scores associated with caregiver satisfaction at 6 months
- Youth WFI scores associated with youth satisfaction at 6 and 12 months and caregiver satisfaction at 6 months
- No other significant associations between WFI scores and outcomes in cross-site analyses
- Several measures showed no relationship with outcome at either wave (6 or 12 mos) for any respondent report
  - CBCL
  - CAFAS
  - BERS
  - Caregiver strain
  - Family functioning
Findings: Fidelity differences between sites

- No difference in wraparound fidelity according to facilitator report between sites 1 and 2
- Small (ES = .38) and only marginally significant difference in caregiver-reported fidelity
- Large (ES = 1.08) and significant difference in youth-reported fidelity
  - However, N of youth surveyed small (Ns = 23, 12)
- These findings about the greater sensitivity of caregiver and youth reports replicate previous studies
Findings: Outcomes differences between sites

- Significant between-group differences found for:
  - Total services received
  - Caregiver satisfaction
  - Restrictiveness of living environment
  - Placement changes
  - Family functioning
    » All differences in hypothesized direction

- No differences found for:
  - Child functioning
  - Child behavior (CBCL or YSR)
  - Behavioral strengths
  - Caregiver strain
  - Family resources
  - Youth satisfaction
Findings: Relationship between fidelity and outcomes

- Caregiver reported fidelity was found to be related to several 6-month outcomes:
  - Restrictiveness of living ($p<.1$)
  - Family resources
  - Caregiver satisfaction

- CG-reported fidelity was associated in the hypothesized direction with all 6-months outcomes

- Overall, however, few significant relationships were found
Limitations

- Actual differences between sites in fidelity was not large
- Differences found in between-site outcomes could be related to factors other than differences in wrap fidelity
- Attrition in outcomes data collection compromises power and leads to difficulties in interpretation in outcomes
- Current exploratory analytic approach increases family-wise error rate and likelihood of Type I error
- Limitation to one WFI assessment point may result in imprecise measurement of fidelity
  - Hypothesis of an association between fidelity as assessed at 6 months and outcomes at 12 months may not be realistic
- Fidelity assessment limited to self-report
Implications

- WFI-3 interviews may not be very sensitive to between-site differences, especially facilitator interviews
- Though differences found were small, results suggest sites that adhere more closely to wraparound principles may:
  - Engage families in more services
  - Be more likely to return youth to home-like settings
  - Be better able to keep placement changes to a minimum
  - Achieve greater service satisfaction
  - Possibly help improve family functioning
- However, as in previous studies, association between quality indicators such as adherence to wraparound principles and more clinical outcomes (e.g., CBCL, CAFAS) found to be inconsistent and weak
Implications

- Relationship between wraparound fidelity and outcomes at a youth and family level may be less clear than has been found previously.

- Why were such relationships not found in this study?
  - Conforming to the principles of wraparound in coordinating services may not be very important to outcomes.
  - Attrition in enrollment in the system of care (and outcomes data collection) may have systematically confounded the relationship.
  - Variance in fidelity scores was fairly limited overall, perhaps these particular system of care sites implemented services that are consistently high quality.
  - The WFI-3 interviews may not be very sensitive to differences in service processes that are proposed to be relevant to outcomes at an individual family level.

  » Studies that experimentally manipulate staff- or site-level implementation may be better able to determine the impact of wraparound on outcomes.
Next steps

- **Continued data analysis**
  - Multi-level modeling on study data, including use of imputation for missing data, to reduce family-wise error rate and increase precision

- **Other steps related to the study findings**
  - The WFI-3 has been revised to better conform to the specified phases and activities of the wraparound process (see [www.rtc.pdx.edu/nwi](http://www.rtc.pdx.edu/nwi)) and also to increase its variability and sensitivity
  - Fidelity measures have been designed and are being pilot tested to augment the use of interviews in assessing adherence to the wraparound model
    » Team Observation Measure
    » Document Review Measure

- **Larger scale, more controlled multi-site studies assessing the relationships between system conditions, wraparound adherence, and outcomes**
For more information

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