Working collaboratively with CANS in Italy: Validation, adaptation and training

A. Didoni, A. Di Troia, S. Benzoni, A. Chinello,
In brief

- Why choosing CANS: key principles that seem to fit very well “our” system of care and our “needs and strengths”

- Validation and adaptation of CANS

- Working with CANS together: training, implementing and making it grow collaboratively
WHY CHOOSING CANS?

- Outcome evaluation is crucial
- Patients and context are complex
- No single available classic psychometric tool serves the purpose
- a new approach is needed
- ...TCOM
Matching outcome evaluation and collaboration with families

Transformation is not about selling services...

Find people you can help, help them and then find some one else
Assessment communicate important information about the people we serve
Impact (workload) more important that productivity
Incentives to treat the most challenging individuals.
Supervision as teaching
Time early in a treatment is more valuable than time later.
System management is about maximizing effectiveness of the overall system
Matching outcome evaluation and collaboration with families

- Complex clinical problems need a collaborative approach
  - For patients
  - For parents
  - At the program level (staff)
  - At the system level (agency)
CANS: a tool to create and communicate a shared vision

An OUTCOME evaluation tool should be collaborative:

- Involvement in care needs "responsibility": the more people feel involved, the highest the chances for positive transformations.
- Complex clinical situations need a strategy to build the shared vision.
- The only outcomes that are relevant to measure are the ones that are relevant to patients and their families.
CANS: make decisions accessible/clear to anyone involved in the case

It is useful for professionals and families:

- Based on the “what”, not on the “why”
- It is about “intensity of actions required”, not about “how bad it is”
- The shared vision becomes “a map” to guide actions and priorities
- It has strong statistical validity
"The CANS has strong evidence as a valid description of children’s needs and strengths.” There are many forms of validity:

- **Face Validity** “Family members and clinical professional routinely recognize the CANS as one of the most face valid approaches currently available.”

- **Concurrent Validity** “This form of validity is whether the measure is related to other measures of overlapping constructs. The CANS has been compared to a number of other measures and has demonstrated good concurrent validity with measures such as the CAFAS and CBCL. The CANS also demonstrates good construct validity when it demonstrates differences in scores across different levels of intensity of service” (e.g., Lyons, et al 2009)

- **Sensitivity to Change** Validity “in the only known outcome comparison with the CAFAS, the CANS demonstrated change while the CAFAS failed to” (Lyons, et al, 2003).

- **Predictive Validity** “There is a substantial body of literature demonstrating that the CANS predicts a number of significant variable including discharge status, level of care, runaway from placement, education success to list only a few.”

- **Utility Validity** “Utility validity is to what degree to people using a particular tool find it useful. The CANS has documented utility in terms of treatment planning, program management, and system transformation. There is no tool with greater evidence of utility in the system than this approach. That is why more than half of all the states in the US use this approach. It is used to describe the needs and strengths of more than 1 million children and families each year ...”

  J. S. Lyons
### Action Level Key

<table>
<thead>
<tr>
<th>Needs</th>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – No Evidence</td>
<td>0 – Centerpiece</td>
</tr>
<tr>
<td>1 – Watch/Prevent</td>
<td>1 – Useful Strength</td>
</tr>
<tr>
<td>2 – Action Needed</td>
<td>2 – Potential Strength</td>
</tr>
<tr>
<td>3 – Immediate/Intensive Action</td>
<td>3 – None Identified</td>
</tr>
</tbody>
</table>
CANS helps us build a critical and systematic view about a patient’s “needs”

- Needs are not just all the same: some we cannot do anything about, some will not change, some we can address but may not be what is needed
- ...the hammer –nail syndrome
- Make us reflect about how destructive is a system of care based only on risk assessment,
# Needs

<table>
<thead>
<tr>
<th>B8</th>
<th><strong>BULLISMO SUBITO</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Nessuna evidenza che l’utente abbia subito atti di bullismo</td>
</tr>
<tr>
<td>1</td>
<td>L’utente ha subito occasionalmente, in passato, atti di bullismo ma sembra aver reagito adeguatamente. Non sembra aver impattato sul funzionamento.</td>
</tr>
<tr>
<td>2</td>
<td>L’utente ha subito in passato, atti di bullismo ma sembra non aver reagito adeguatamente. Quanto accaduto sembra aver impattato negativamente sul funzionamento.</td>
</tr>
<tr>
<td>3</td>
<td>L’utente attualmente subisce atti di bullismo e sta avendo difficoltà nel reagire adeguatamente. Quanto sta accadendo ha un impatto negativo sul funzionamento.</td>
</tr>
</tbody>
</table>
### Needs

- **CAT: dominio BISOGNI EMOTIVO- COMPORTAMENTALI DELL’UTENTE**

<table>
<thead>
<tr>
<th>Punti</th>
<th>CONTROLLO DELLA RABBIA A40</th>
<th>CONTROLLO DELLA RABBIA A40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Valutare riferendosi al livello più alto <em>nelle 24 ore</em></td>
<td>(Ricordarsi di escludere le 24 ore precedenti, per valutare in riferimento ai 30 giorni) Valutare riferendosi al livello più alto <em>negli ultimi 30 gg.</em></td>
</tr>
<tr>
<td>0</td>
<td>Nessuna evidenza di problemi significativi di controllo della rabbia.</td>
<td>Nessuna evidenza di problemi significativi di controllo della rabbia.</td>
</tr>
<tr>
<td>1</td>
<td>Alcuni problemi di controllo della rabbia. In situazioni di frustrazione, l’utente a volte può diventare verbalmente aggressivo. Coetanei e familiari potrebbero essere consapevoli delle difficoltà dell’utente e cercare di evitare comportamenti che possano indurre scoppi d’ira.</td>
<td>Alcuni problemi di controllo della rabbia. In situazioni di frustrazione, l’utente a volte può diventare verbalmente aggressivo. Coetanei e familiari potrebbero essere consapevoli delle difficoltà dell’utente e cercare di evitare comportamenti che possano indurre scoppi d’ira.</td>
</tr>
<tr>
<td>2</td>
<td>Problemi moderati di controllo della rabbia. L’utente ha un temperamento che determina difficoltà significative con i coetanei, la famiglia e/o la scuola. La rabbia può essere associata a violenza fisica. In genere gli altri sono consapevoli delle difficoltà dell’utente rispetto al controllo della rabbia.</td>
<td>Problemi moderati di controllo della rabbia. L’utente ha un temperamento che determina difficoltà significative con i coetanei, la famiglia e/o la scuola. La rabbia può essere associata a violenza fisica. In genere gli altri sono consapevoli delle difficoltà dell’utente rispetto al controllo della rabbia.</td>
</tr>
</tbody>
</table>
CANS remind us to care about **strengths** as much as we do about needs

- We are not used at, or trained for, **assessing strengths**
- In complex clinical situations, needs and problems often change very little over time. **Outcome relies also on strengths improvement**
- Clinical action should:
  - i) not harm any existing strengths
  - ii) promote their expression
  - iii) address problems, symptoms and needs
Strengths (PdF) (Vocational)

- Sergio, 17 anni, vuole fare il meccanico. Attualmente lavora in una officina della zona.

<table>
<thead>
<tr>
<th>Punt.</th>
<th>ATTITUDINI V7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Valutare il livello più alto negli ultimi 30 giorni.</td>
</tr>
<tr>
<td>0</td>
<td>L’utente ha attitudini specifiche ed esperienze lavorative rilevanti.</td>
</tr>
<tr>
<td>1</td>
<td>L’utente ha alcune attitudini o esperienze lavorative.</td>
</tr>
<tr>
<td>2</td>
<td>L’utente ha alcune pre-competenze attitudinali o degli interessi attitudinali.</td>
</tr>
<tr>
<td>3</td>
<td>Non ci sono punti di forza attitudinali identificati OPPURE l’utente ha bisogno di assistenza significativa per sviluppare competenze attitudinali.</td>
</tr>
</tbody>
</table>
- some items/domains are similar through the versions
- Some items/domains are version specific
CANS: help us see the patients in “his own world” not in “ours”

• Scores in items do not change if a certain intervention in that “area” remains necessary: we measure change, not the cure.
• In a transformational system of care, outcomes evaluation it is not about the direct effects of what we do, it is about how much people can go without us
CANS and outcome evaluation

- CANS make outcome evaluation useful **at the patient level**; help us define “**what has worked**” and take new decisions together
- Outcome evaluation becomes part of the collaborative work with families, a way to recognise change and share it.
CANS and quality improvement

- At the program level or system level, outcome evaluation help us understand who really are our patients
- help us understand also “what has not worked”, and pushes us to a quality improvement of our actions, centered on families values, not on productivity
- It is for the “good” non for the “bad” ones: Any professional who works well, needs a feedback
CANS and the CAMH “community”

- Quality improvement is a learning process: it is about learning together what works and what does not.
- We all have very little time, but the time is spent better if we manage:
  - i) to show how good we are in doing what we do, and why people should support us
  - ii) to learn how to improve our work
Different health and welfare systems, language and culture influence items interpretation and users reliability in the use of CANS tools. Their effects are not easy to identify and resolve. A complex process of adaptation is therefore needed, with different working groups, multicenter pilot experimentations and progressive collaborative revision to reach adequate consensus.
CANS FOR ITALY: project
CANS tools

**CANS 0-5**
- Age range: 0 to 5 y.o.
- Infants
- N° items: 66
- Main Domains: Functioning, Risks, Strengths, Needs, Caregiver

**CANS 5-17**
- Age range: 5-17 y.o.
- Children and Adolescents
- N° items: 82
- Main Domains: Functioning, Risk, School, Strengths, Needs, Caregiver

**CAT**
- CRISIS
- N° items: 57
- Main Domains: Functioning, Risk, School, Strengths, Needs, Caregiver, Protection
CANS Adaptation Biases
CANS Adaptation: English-based Tool for Italian users

Italian adaptation is surely the solution but....

- To develop an ITA version of a test originally thought in an other language (ENG) implies an effort similar to develop it from 0-level, with the only exception of its topics/domains.
- The simple translation of items in ITA doesn’t imply automatically maintaining test/questionnaire properties.
- A simple direct translation of items is NOT always the best solution (adaptation versus translation)
- Cross-cultural differences should be considered during item translation, preserving the original construct.
CANS Adaptation: Bias

**Bias**: a particular tendency, trend, inclination, feeling, or opinion, especially one that is preconceived or unreasoned

- To Present a partial perspective
- Distortion or Misrepresentation

Van de Vijver e Poortinga (2005) underlined different biases, among them:

- **Item Bias** (Culture → Construct)
- **Scoring Bias** (User)
- **Bias of Administration**
Bias: Item

Abstractiveness (versus Concreteness) of construct

Theoretical/“weightless” items

Vs.

Countable/“touchable” items

Curiosity VS School attendance

+ FAQs and details/examples for abstract items

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Variation of construct expression during the development

CANS 5-17

Age range: from 5 to 17 y.o.

Ex. “Curiosity” for a child Vs an adolescent.

A Specific Cultural Bias

Sexual behaviors

Religion/Spiritual aspects

- Sometimes not investigated
- Overestimated (sex) or underestimated (religion)

- Role of social stigma, stereotypes and individual judgment criterion

Not only construct, but also a **scoring bias**!
CANS Adaptation: Scoring Bias

An Italian example

Questionnaire structure: 4 points scale

Propensity to score more 1 rather than 0 (→ overestimation): to pay too much attention to a piece of information (due to implicit analytical/causal thinking)

Propensity to score 2 rather than 3 (→ underestimation): reduction of alarm

“TOO MANY ZEROs” EFFECT

Reduced motivation or sense of professional incapability (self-efficacy)

“Anxiety” for a lack of CANS variations between two subsequent administrations

Too early for change detection!

# Psych. Factors more stable than other factors

Day 1  Day +90  Day +180  ...

2  2  2  ...
CANS: graphic representation

Table and graphic representation

CANS 5-17: scoring sheet
Each hole means a need
Updating graphic representation

- Training external staff contributed to highlight the potential and limitations of the graphic representation.

- Collaboration and sharing with external teams provided a different perspective that pointed out some limits.

- These views became valuable sources of reflection and improvement and made the “shared vision” concept more clear.
Updating graphic representation
# The Italian Database

<table>
<thead>
<tr>
<th>Scopo</th>
<th>Modalità</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive statistics of sample (Mean, Frequ.)</td>
<td>Bar-, -pie- graph etc</td>
<td>Sex, Age, Diagnosis etc</td>
</tr>
<tr>
<td>CANS Graph</td>
<td>-Pentagon of domains</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Zoom (individual)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Zoom (sample, %)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Histogram</td>
<td></td>
</tr>
<tr>
<td>Entry-level profile (observational)</td>
<td>Frequencies, Mode</td>
<td>Macro-effects</td>
</tr>
<tr>
<td>Longitudinal profile</td>
<td>Mean Frequencies, Mean values,</td>
<td></td>
</tr>
<tr>
<td>Profile “single case”</td>
<td>CANS profile</td>
<td></td>
</tr>
</tbody>
</table>
CANS: comparing sample outlines

- Population's Average Profile (MODE):
  - Defining the most common level of need in a single sample
  - Graphic representation as an individual profile

- “Pro”:
  - Simplicity of reading:
  - Identical as individual representation is more readable for those who already use the instrument
  - Overlapping T

- “Con”:
  - Risk of losing some significant nuances towards samples
CANS: comparing sample outlines

- Domains single scores % pentagon (individual and sample)
  - Graphic representation as an individual profile
  - Identical BUT different:
  - Differences:

Single subject % score distribution at T0

Population % score distribution in T0
CANS: comparing sample outlines

Funzionamento nel contesto di vita

Migranti con famiglia

MSNA data
Facilitates samples comparison
CANS Experimentation
**CANS tools**

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The HEADS-ED: A Rapid Mental Health Screening Tool for Pediatric Patients in the Emergency Department

AUTHORS: Mario Cappelli, PhD, a,b,c Clare Gray, MD, a,b,c Roger Zemek, MD, a,b,c Paula Cloutier, MA, a Allison Kennedy, PhD, a Elizabeth Glennie, MA, a Guy Doucet, MSW, a and S. Lyons, PhD a

Departments of aMental Health and bEmergency, cHospital of Eastern Ontario, Ottawa, Canada; Department of Psychiatry, Psychology, and cPediatrics, University of Ottawa, Ottawa, Canada; and cPediatric Emergency Research (PERC), Ottawa, Canada

WHAT'S KNOWN ON THIS SUBJECT: The American Academy of Pediatrics prioritized detection of mental illness in children and adolescents in 1999 (1). In 2001, they recommended that pediatricians assess for potential mental health issues in 50% of children by the age of 10 years (2). This recommendation was based on the recognition that mental health conditions are common in children and adolescents and that early intervention is critical for positive outcomes.

HEADS-ED

F0. _______________

0

1

2

Ambiente familiare

<table>
<thead>
<tr>
<th>Non necessario</th>
<th>1 tensione di norma non critica</th>
<th>2 tensione di norma critica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scene</td>
<td>Caos tra i coniugi</td>
<td>Soluzione</td>
</tr>
<tr>
<td>Problemi</td>
<td>Vanno corretti</td>
<td>Non giudicato</td>
</tr>
</tbody>
</table>

Scuola

<table>
<thead>
<tr>
<th>Non frequentemente</th>
<th>Frequento</th>
<th>Non frequento</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attività e relazioni con i pari</td>
<td>Non operativo</td>
<td>Operativo</td>
</tr>
</tbody>
</table>

Alimenti e sostanze

Quanto ai cibi e bevande, ti sembra che il tuo bambino... non mangi satisfactory | Non operativo | Operativo |

Suicidio e depressione

<table>
<thead>
<tr>
<th>Non operativo</th>
<th>Operativo</th>
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Emozioni, comportamenti, disturbi del pensiero

<table>
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<tr>
<th>Non operativo</th>
<th>Operativo</th>
</tr>
</thead>
</table>

Risarcimento

<table>
<thead>
<tr>
<th>Non operativo</th>
<th>Operativo</th>
</tr>
</thead>
</table>

CANS TOOLS: HEADS-ED

HEADS-ED

F0. _______________

0

1

2

Suicidio e depressione

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Emozioni, comportamenti, disturbi del pensiero

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Risarcimento

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<tr>
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</table>
CANS Steps

Key-processes: Training & Familiarization, Field trial, Auditing

Training

- 3 training courses 2014/15 – internal staff (+students)
- 5 training courses 2016/17 – external staff

  - Total of external trained institutes/services: 16
  - Total trained operators: all internal staff (80) + 142 external staff

Familiarization Goals

- Become a CANS/CAT expert
- Consensus among clinical staff (inter-rater reliability)
Reliability

- Training after training we saw an improvement in the reliability score:
  - During group exercitation
  - &
  - also during the practice vignette

- Percentage of success habilitated for CANS use
  - 2016: 70%
  - 2017: 96%

  High percentage of success of people habilitated for CANS use at the first attempt
How we reached the goals: changing the training format

- Extension of training duration:
  - More time for exercises
  - Time for explaining graphic representations
  - Transformational care plan
- Homework
- Group Exercises:
  - Experimenting how to reach the shared vision “live” between Operators with different professional background
- Final exam on line
Key-processes: Training & Familiarization, **Field trial**, Auditing

**From limited to extensive field trial**

Agreement among clinical staff, families/children for CANS
Role of therapeutic alliance with families

**Field trial Steps**

T0: first contact/consultation
T1: +90 days
T2: +180 days
Tn: n+90 days

Or in case of variation of clinical actions:
- Change/end of treatment
- Service-to-service passage
From Field Trial to CANS monitoring

- Collect observations regarding procedural difficulties and integration of CANS tools within service organization levels

- Motivate operators for CANS use

- Promote TCOM approach:
  • To support clinical decision making and system resources management
  • To promote a shared vision, conflicts reduction and agreement as part of the result

- Create a tight connection between CANS staff and clinical operators by identifying a CANS representative for each project/local office.

- Obtain feedback on CANS tools and support final revision of them.

- Test the usability of CANS tools (questionnaire)
Key-processes: Training, Familiarization, Field Trial, Auditing

CANS Usability and Adaptation: QUESTIONNAIRE (september 2016)

30 items (Questions)
2 Sections:

- Operator details (11): gender, age, profession, CANS use, service details
- CANS details (19): 11 Likert questions, 8 open questions

--- Sample: 52 participants ---

(41 F - 11 M)
46% Psychologist, 29% NPI, Others (educator/therapist)
Key-processes: Training, Familiarization, Field Trial, Auditing

CANS Usability and Adaptation: RESULTS

--- CANS use ---

Scoring: 40 min (mean)
Staff involved: 3 (mean)
% use for each service: 41% (± 51 s.d.)

“The younger an operator is, the more he/she uses CANS tools”

“The more you use CANS, the faster CANS scoring time is”

**Items (+difficulty):** attitude, self expression, resilience, perseverance, curiosity
Future directions
“TOGETHER WITH CANS”
Future directions (1)

- Widespread use of CANS in CAMHS for multidimensional and multi-axial evaluation of outcomes
- Continuous improvement and training support for groups/teams (CANS audit)
- Promote / support a multicenter study and data collection
- Promote / support other clinical research projects
Future directions (2)

- Improve
  - statistical analysis
  - Graphic representation from individual to sample
    - Pentagon of domains % (individual and sample)
    - Zoom (individual)
    - Zoom (sample, %)
# Four patterns of change

<table>
<thead>
<tr>
<th>Analysis A: “improved” 4</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of children for whom the item rating decreased from ( t_0 ) to ( t_i )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis B: “worsened”</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of children for whom the item rating increased from ( t_0 ) to ( t_i )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis C: “resolved”</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of children for whom the item rating decreased from the “actionable” range of 2 or 3 at ( t_0 ) to the “non-actionable” range of 0 or 1 at ( t_i )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis D: “newly identified”</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of children for whom the item rating increased from 0 at ( t_0 ) to 2 or 3 at ( t_i )</td>
</tr>
</tbody>
</table>
Future directions (3)

CANS European Network
CANS is a language, yuo do not learn it at school... you can only learn it by practicing

one of the most frequent complaints for those who start using CANS is that it is hard to agree about scores. But it is not the cans creaeting disagreement, it is rather that CANS allow us to better realize to what extent we do not agree.
Grazie