Idiopathic Environmental Intolerance (IEI): Toxicogenic and Psychogenic Theories

Herman Staudenmayer, Ph.D.
Multi-Disciplinary Toxicology Diagnostic, Treatment and Research Center
Denver, Colorado
IPCS/WHO description of IEI

• An acquired disorder with multiple recurrent symptoms
• Associated with diverse environmental factors tolerated by the majority of people
• Not explained by any known medical, psychiatric or psychological disorder
Bradford Hill’s Criteria of Causality Applied to IEI

<table>
<thead>
<tr>
<th>Strength</th>
<th>Plausibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistency</td>
<td>Coherence</td>
</tr>
<tr>
<td>Specificity</td>
<td>Experiment</td>
</tr>
<tr>
<td>Temporality</td>
<td>Analogy</td>
</tr>
<tr>
<td>Biological Gradient</td>
<td></td>
</tr>
</tbody>
</table>

- Strength
- Consistency
- Specificity
- Temporality
- Biological Gradient
- Plausibility
- Coherence
- Experiment
- Analogy
An Additional Criteria

• REVERSIBILITY
1. Strength of Association

- defined in terms of the prevalence of symptoms and disease in the exposed population
- Hausteiner et al. list 252 multiorgan system symptoms of IEI
- no objective signs or laboratory tests
1. Strength of Association

- **TOXICOLOGIC**
  - everyone is exposed
  - no epidemiological risk factors
  - no exclusion criteria
  - scientific societies reject it as a diagnosis

- **PSYCHOGENIC**
  - functional somatic syndromes
  - multiorgan system complaints
  - belief and iatrogenic suggestion
2. Consistency

• There are two aspects to replication of findings that apply to IEI:
  – Reliability of symptoms to exposure
  – Independent replication
2. Consistency

- **TOXICOGENIC**
  - unsubstantiated methodology
  - open provocation challenges illicit reactions
  - double-blind, placebo-controlled provocation challenges show unreliability

- **PSYCHOGENIC**
  - 1983-2003 studies have over 800 cases
  - co-morbid and pre-morbid psychiatric and psychologic disorders
3. Specificity

- The association is limited to people whom have had specific exposures with specific reactions in specific physiological systems
  - In toxicology, the agent determines specificity
  - In IEI, the individual determines specificity
3. Specificity

- **TOXICOGENIC**
  - no specific exposures
  - no unique physiologic systems
  - no specific symptoms
  - no objective signs of disease

- **PSYCHOGENIC**
  - panic/hyperventilation
  - stress physiology
  - belief
4. Temporality

- The exposure must precede the effect.
- There are two phases of IEI to which temporality applies:
  - Onset of environmental intolerance
  - Triggered reactions
4. Temporality

- **TOXICOGENIC**
  - no specific time course
  - precipitating event often by history alone
  - *post hoc ergo propter hoc*

- **PSYCHOGENIC**
  - genetic predisposition
  - childhood trauma
  - developmental or personality disorders
  - concurrent stressors
5. Biological Gradient

- dose-response
- magnitude of effects correlate with the amount of exposure.
5. Biological Gradient

- TOXICOGENIC
- total body load
- no dose-duration-response curve
- linearity of effects assumed down to one molecule

- TOXICOGENIC
- developmental trauma, PTSD, etc......
- lower sensitivity for stress-responses
- hyperresponders
6. Biological Plausibility

- The association must be biologically plausible and consistent with scientific knowledge.
6. Biological Plausibility

- **TOXICOGENIC**
  - immune dysregulation
  - limbic kindling
  - time-dependent sensitization
  - RADS, RUDS, IVCD
  - neurogenic switching
  - toxic encephalopathy

- **PSYCHOGENIC**
  - learned sensitivity
  - vigilance for exposure
  - symptom amplification
  - closed belief of attribution
7. Coherence

- The causal interpretation does not conflict with generally known facts of the natural history and biology of the symptoms.
7. Coherence

- **TOXICOGENIC**
  - no natural history
  - no underlying biology
  - IEI mimics the neurobiology of stress and psychiatric disease

- **PSYCHOGENIC**
  - neurobiology of stress and emotional trauma
  - genetic disposition
  - personality traits
  - somatization
8. Experimental Intervention

• Some preventive action or intervention prevents the association.
8. Experimental Intervention

**TOXICOGENIC**
- avoidance of agents
- provocation
- neutralization
- sauna depuration
- vitamins-supplements
- “safe house”

**PSYCHOGENIC**
- medication
- psychotherapy
- psychophysiological therapy
- behavioral desensitization
9. Analogy

• There is an analogy to well-characterized disease or disorder.
9. Analogy

- **TOXICOGENIC**
  - unlike any known toxic syndrome
  - requires a scientific paradigm shift

- **PSYCHOGENIC**
  - functional somatic syndromes
  - panic disorder
10. Reversibility

- There is improvement in health status with removal from exposure.
- This is not one of the Hill criteria.
- ATSDR* recommended Hill’s criteria to infer causation in individual cases of exposure.
- *US Agency for Toxic Substances and Disease Registry
10. Reversibility

**TOXICOGENIC**
- after initial perceived or actual exposure, there is chronicity.
- treatments offer no cure, only slowing of debilitating effects

**PSYCHOGENIC**
- beliefs are difficult to restructure
- addressing underlying psychopathology often is effective
Conclusion: Toxicogenic Theory

- Does not meet any of the 10 criteria
  - Hypothesized neurobiological mechanisms are implausible
  - Effects are unreliable
- The research program is degenerative
  - Absence of evidence for postulates
  - Reinterprets evidence supporting Psychogenic theory
Conclusion: Toxicogenic Theory

• A scientific paradigm shift is unwarranted
  – Symptoms are synonymous with disease
  – Attributions are synonymous with cause
  – Methodology is subjective impression and no more
Conclusion: Psychogenic Theory

- Meets all of the 10 criteria
- The research program is progressive
  - Premorbid and comorbid psychopathology is reliable
  - Neurobiological mechanisms of stress-responses and panic explain symptoms
  - Cognitive mechanisms explain triggered reactions
Conclusion: Psychogenic Theory

- IEI is a disorder of belief
- Iatrogenically and socially reinforced
- Somatization
- Motivation: primary and secondary gain
- Treatment is psychological
Medical Cult

• exploitation, personal and financial
• indoctrination
• membership serves psychological defenses, e.g., denial, projection
• preoccupation with rituals obviates insight
• empathic community of believers
Exploitation of the Vulnerable

• indoctrinated to a closed belief
• risk of greater distress and stress-related medical disorders
• chronicity of untreated medical and psychiatric disorders
• social and vocational impairment
• poor quality of life, family alienation
• mortality