The Reasoned Action Approach in HIV Risk-Reduction Strategies for Adolescents

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Two key characteristics of effective HIV/STD risk-reduction interventions:

- Grounded in behavior change theory
- Tailored to the population or culture
Grounding in behavior change theory is a key feature of effective interventions.

- Social Cognitive Theory
- Reasoned Action Approach:
  - Theory of Reasoned Action
  - Theory of Planned Behavior
Why we used the reasoned action approach

- An applied interest in reducing the impact of the HIV epidemic, particularly on inner-city African American populations.
- Theory based intervention versus atheoretical intervention.
- Culturally and developmentally appropriate versus inappropriate.
- Which theory should we use?
Why we used the reasoned action approach

- No unique theory of the behavior of inner-city African Americans relevant to sexual risk behavior and changes in such behavior.
- Review of social psychological theories.
- Theory of reasoned action and its extension the theory of planned behavior most useful.
Why we used the reasoned action approach

- Behavioral intention determines behavior.
- Different classes of beliefs: behavioral, normative, and control.
- A clear prescription for intervention.
- Design interventions to affect these beliefs and through a mediation process affect behavior.
Why we used the reasoned action approach

- A strategy for identifying the relevant beliefs.
- Target salient beliefs for the population.
- Identify them through qualitative research, focus groups, elicitation surveys.
- The relative predictive power of behavioral, normative, and control beliefs could vary from population to population.
- Middle-class White college students versus inner-city Black women versus Xhosa adolescents.
Phases of Research

- Qualitative Research
- Questionnaire Development
- Design the Intervention
- Pilot Test the Intervention
- Evaluation
- Dissemination
Strategies to Curb Sexual Risk Behavior Can Focus on:

- Abstinence
  - Decreasing the frequency of sexual behavior.
  - Delaying sexual debut.
- Safer Sex
  - Increasing the frequency of condom use.
- Most research has focused on safer sex.
Can an abstinence-only intervention reduce sexual risk behavior among adolescents?

Can an intervention maintenance strategy increase the long-term efficacy of HIV/STD risk reduction interventions?
Project Description: Interventions

- 8-hour Abstinence-Only Intervention
- 8-hour Safer-Sex Intervention
- 12-hour Combined Abstinence/Safer Sex
- 8-hour Combined Abstinence/Safer Sex
- 8-hour Health Promotion Intervention (Control condition)
Intervention Maintenance Component: Review and Support

The purpose is to:

- Reinforce the message of the intervention
- Identify barriers to implementation of the recommended behavior
- Help participants surmount barriers to implementation of the recommended behavior
Participants

- 662 African American grade 6 and 7 students
- Mean age was 12.0 years
- 53% were girls
- 23% ever had sexual intercourse
- 12% had sexual intercourse in past 3 months
- 0.3% reported same-gender sexual activity
Follow-up return rates

- 84.4% attended the 24-month follow-up
- Mean attendance was 4.5 follow-ups
- 98.0% attended at least one follow-up
- No differences among interventions in follow-up rates.
Analysis of Intervention Efficacy

- Self-reports of ever having sexual intercourse by the 24-month follow-up period.
- Logistic regression model.
- Controls included intervention maintenance condition, gender, and age.
Percentage of Baseline Virgins Reporting Sexual Experience by 24-month Follow-up\textsuperscript{1,2,3+}
Secondary Analyses of Intervention Efficacy

- Generalized estimating equations (GEE).
- Logistic regression for binary outcomes.
- Controls included baseline measure of criterion, time, intervention maintenance condition, gender, and age.
Sexual Intercourse Incidence Over the 24-month follow-up

- Health control participants had a higher self-reported incidence of sexual intercourse than did:
  - Abstinence-only ($P = 0.02$)
  - 12-hour combined ($P = 0.06$; marginal)
Incidence of Multiple Partners Over the 24-month follow-up

- Abstinence-only did not differ from control intervention ($P = 0.13$)
- Control intervention participants had a higher self-reported incidence of multiple partners than did:
  - 8-hour combined ($P = 0.03$)
  - 12-hour combined ($P = 0.02$)
Intervention Maintenance Component Enhanced Efficacy

- Reduced incidence of multiple partners in abstinence-only versus control intervention ($P = 0.03$)
- Reduced incidence of multiple partners in 12-hour combined versus control intervention ($P = 0.04$)
Construct validity of the abstinence-only intervention

- Convergent validity--an intervention should cause positive changes on variables it was designed to change.
- Discriminant validity--an intervention should not cause negative changes on variables it was not designed to change.
- We found evidence for the construct validity of the abstinence-only intervention.
Significant Effects on Mediators of Sexual Intercourse Over the Follow-up Period

- Intention to have sexual intercourse
- Attitude toward sexual intercourse
- Beliefs about the negative consequences of sexual intercourse
- Sexual partner normative beliefs
- HIV/STD risk-reduction knowledge
No Adverse Effects on Mediators of Condom Use or Condom Use

- Intention to use condoms
- Belief that condoms prevent pregnancy, STD, and HIV
- Condom-use knowledge
- Consistent condom use
- Condom use at last sexual intercourse
An Effectiveness Trial

Are evidenced-based HIV/STD interventions effective when implemented by likely end-users, including schools, health-care organizations, and CBOs?
Jemmott, Jemmott, Fong, & Morales (2010, Am J Public Health)

- Cluster-randomized controlled trial
- 86 community-based organizations in Philadelphia and New Jersey
- Be Proud! Be Responsible!
- Health promotion

- Intensity of facilitator training
- 3,448 adolescents 13 to 18 years of age
- Follow-up sample, N = 1,707
- 83% Black
- 13% Latino
- 91% assessed at least once in 12-month follow-up period
Effects on Mediators Over the Follow-up Period

- HIV/STD knowledge
- Condom-use knowledge
- Self-efficacy to use condoms
- Condom-use hedonistic beliefs
- No effects on mediators of sexual intercourse
## Effects on condom use during the follow-up period

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Effect</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% condom use</td>
<td>1.39</td>
<td>1.06, 1.84</td>
<td>0.02</td>
</tr>
<tr>
<td>Condom use at last sex</td>
<td>1.29</td>
<td>1.00, 1.67</td>
<td>0.05</td>
</tr>
<tr>
<td>Proportion condom-protected sex</td>
<td>0.06</td>
<td>0.00, 0.12</td>
<td>0.04</td>
</tr>
<tr>
<td>Frequency of condom use</td>
<td>1.23</td>
<td>1.02, 1.47</td>
<td>0.03</td>
</tr>
<tr>
<td>Frequency of sex</td>
<td>1.06</td>
<td>0.88, 1.28</td>
<td>0.56</td>
</tr>
</tbody>
</table>
Implications

- Efficacious risk reduction interventions can be effective when implemented by community-based organizations.
- Training of facilitators need not be extraordinarily extensive or expensive to achieve desired results.
Is skills practice necessary to achieve behavior change?
Can behavioral interventions reduce STD incidence among adolescents?
Jemmott, Jemmott, Braverman, & Fong (2005, Arch Ped Adol Med): Design

- Randomized controlled trial
- Adolescent Medicine Clinic
- 682 adolescent girls
  - 68% Black
  - 32% Latino
  - 22% STD positive

- Skill-based intervention
- Information-based
- Health promotion
- 89% 12-month follow-up retention
Adjusted mean frequency of unprotected intercourse in the previous 3 months$^8,^9$
Adjusted STD Incidence

![Bar chart showing adjusted STD incidence for 6-month and 12-month periods.](chart)

- **Health**: Red bars
- **Information**: Purple bars
- **Skill**: Deep red bars

The chart indicates a comparison of adjusted STD incidence across different categories (Health, Information, Skill) for 6-month and 12-month periods.
Adapting the Reasoned Action Approach for Adolescents in a Developing Country

A Randomized Controlled Trial in South Africa
Jemmott, Jemmott, O’Leary et al. (2010, Arch Ped Adol Med)

Design

- Cluster-Randomized Controlled Trial
- School as the unit of randomization
- 18 senior primary schools
- Urban and rural schools
- 1,057 or 94.5% of 1,118 eligible Grade 6 learners were enrolled
Community Advisory Board

- Planning of the project
- Appropriateness of the curricula for Xhosa-speaking adolescents
- Effective and acceptable procedures
- Interpretation of findings
- Dissemination of the findings
Extensive Preliminary Research

- Focus groups with grade 6 learners.
- Focus groups with parents.
- Consultation and dialogue with key informants.
- Pilot tests of the survey.
- Pilot test of the interventions in English in the urban area.
- Pilot test of the interventions in Xhosa in the urban area.
- Pilot test of the interventions in Xhosa in the semi-rural area.
Examples of Salient beliefs

- Condoms destroy the sensation of meat to meat or flesh to flesh.
- Can’t eat sweets with paper still on.
- Condoms too big for young boys.
- Condoms prevent AIDS.
- Peers approve of sex.
- By having sex, you can pass on your seed.
Examples of Cultural Beliefs

- Witchcraft can cause AIDS.
- Not doing your duty by your ancestors can cause AIDS.
- Sex with a virgin can cure AIDS.
- Men cannot say no to sex.
- It is important for a man to pass on his seed.
Structure of the Interventions

- Twelve 1-hour modules implemented over six 2-module sessions
- Extracurricular period
- Implemented in Xhosa
- Male and female adult co-facilitator pairs.
Cultural Adaptations

- Language issues regarding sexuality
- Use of videos
- Comic Workbook
- Homework assignments
- “Long walk home”
- “Hat Activity”
- “Doll Activity”
- “Recipe Activity”
- Pedestrian safety, wound care, personal hygiene
Sociodemographic Characteristics by Intervention

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Health</th>
<th>HIV/STD</th>
<th>P &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>50.9%</td>
<td>54.5%</td>
<td>0.25</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td>0.19</td>
</tr>
<tr>
<td>9-11</td>
<td>21.0%</td>
<td>25.6%</td>
<td></td>
</tr>
<tr>
<td>12-13</td>
<td>61.4%</td>
<td>58.7%</td>
<td></td>
</tr>
<tr>
<td>14-18</td>
<td>17.6%</td>
<td>15.7%</td>
<td></td>
</tr>
<tr>
<td>Father present</td>
<td>40.5%</td>
<td>37.3%</td>
<td>0.30</td>
</tr>
<tr>
<td>Rural resident</td>
<td>7.9%</td>
<td>7.3%</td>
<td>0.72</td>
</tr>
</tbody>
</table>
## Baseline Behaviors by Intervention Condition

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Health</th>
<th>HIV/STD</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual experience</td>
<td>2.2%</td>
<td>4.3%</td>
<td>0.06</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>2.8%</td>
<td>3.0%</td>
<td>0.85</td>
</tr>
<tr>
<td>Alcohol</td>
<td>5.2%</td>
<td>7.6%</td>
<td>0.12</td>
</tr>
<tr>
<td>Dagga</td>
<td>2.4%</td>
<td>1.2%</td>
<td>0.15</td>
</tr>
<tr>
<td>Talked to parent--abstinence</td>
<td>45.4%</td>
<td>40.9%</td>
<td>0.14</td>
</tr>
<tr>
<td>Talked to parent--condom use</td>
<td>12.1%</td>
<td>9.3%</td>
<td>0.14</td>
</tr>
</tbody>
</table>
Number and Percentage of Learners Attending Each Intervention Session.

<table>
<thead>
<tr>
<th>Session</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1057</td>
<td>100.0%</td>
</tr>
<tr>
<td>2</td>
<td>1042</td>
<td>98.6%</td>
</tr>
<tr>
<td>3</td>
<td>1034</td>
<td>97.8%</td>
</tr>
<tr>
<td>4</td>
<td>1025</td>
<td>97.0%</td>
</tr>
<tr>
<td>5</td>
<td>1027</td>
<td>97.2%</td>
</tr>
<tr>
<td>6</td>
<td>1031</td>
<td>97.5%</td>
</tr>
<tr>
<td>Mean</td>
<td>1036</td>
<td>98.0%</td>
</tr>
</tbody>
</table>
## Number and Percentage of Learners Attending the Data Collection Sessions.

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>1,057</td>
<td>100.0%</td>
</tr>
<tr>
<td>Post</td>
<td>1,041</td>
<td>98.5%</td>
</tr>
<tr>
<td>3-Month</td>
<td>1,029</td>
<td>97.4%</td>
</tr>
<tr>
<td>6-Month</td>
<td>1,031</td>
<td>97.5%</td>
</tr>
<tr>
<td>12-Month</td>
<td>1,024</td>
<td>96.9%</td>
</tr>
<tr>
<td>At least 1 follow-up</td>
<td>1,043</td>
<td>98.7%</td>
</tr>
</tbody>
</table>
Effects on sexual behavior outcomes during the 12-month follow-up period.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprotected vaginal intercourse</td>
<td>0.49</td>
<td>0.29 - 0.83</td>
</tr>
<tr>
<td>Vaginal intercourse</td>
<td>0.61</td>
<td>0.40 - 0.91</td>
</tr>
<tr>
<td>Multiple vaginal partners</td>
<td>0.49</td>
<td>0.27 - 0.88</td>
</tr>
<tr>
<td>Anal intercourse</td>
<td>0.57</td>
<td>0.32 – 1.00</td>
</tr>
</tbody>
</table>
### Effects (mean differences) on mediators during the 12-month follow-up period

<table>
<thead>
<tr>
<th>Outcome</th>
<th>B</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinence self-efficacy</td>
<td>0.27</td>
<td>0.16 - 0.39</td>
</tr>
<tr>
<td>Condom-use self-efficacy</td>
<td>0.22</td>
<td>0.12 - 0.32</td>
</tr>
<tr>
<td>HIV/STD risk-reduction knowledge</td>
<td>1.47</td>
<td>1.14 - 1.80</td>
</tr>
<tr>
<td>Condom-use knowledge</td>
<td>0.58</td>
<td>0.47 – 0.69</td>
</tr>
<tr>
<td>Cultural myths</td>
<td>0.31</td>
<td>0.15 – 0.47</td>
</tr>
</tbody>
</table>
Comments of Parents’ of Pilot Intervention Participants:

- “It has built a foundation for me to talk to my child about sex freely.”

- “I was so ashamed to speak to my child about condoms, sex, periods etc, so guys thanks. You started the way, so I am going to follow your footsteps.”

- “This program has given us a chance to talk about things that we were embarrassed to mention. I really appreciate everything.”

- “It also develop the child as a whole and about how they must eat healthy food.”
Other Analyses

- School-level analyses
- Moderator analyses
- Mediation analyses
Disseminating the risk reduction intervention

- Adapting the risk reduction intervention for use in the classroom by teachers
- Training teachers
- Providing technical assistance
- Evaluative feedback
- Life skills curriculum alternative
Implications

- The Reasoned Action Approach is robust
- Integrating theory with quality information about the population and context yields efficacious interventions for a variety of sexual behaviors
- Such interventions can be delivered by CBOs, can influence both self-report and biological outcomes, and can be useful internationally
Thank you!