Using Interspersal Procedures to Improve Academic and Behavioral Skills

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Using Interspersal Procedures/High-Preference Strategies to Increase Academic Performance and Task-Oriented Behaviors

Elias Clinton
Task Difficulty and Off-Task Behaviors

- Familiar statements associated with academic work:
  - “This is too hard.”
  - “I’m bored.”
  - “I hate this!”
  - “I can’t do this.”
  - “I don’t know this stuff.”
  - “@*!?!#! This sucks!”
Let’s Start with The Facts

• Skill improvement is based on repeated practice
  – Practice cannot occur if students do not engage in tasks

• Teachers commonly report “off-task behaviors” and “non-compliance” as common behavior issues
  – Students ask to leave
  – Complaining
  – Refusal to complete work
  – Sleeping
  – Aggression
  – Doodling

• Students history of repeated failure may lead to negative beliefs about abilities

• Research has indicated that manipulating the ratio of known to unknown items within an assignment can increase academic proficiency, compliance, and on-task behaviors
Interspersal Procedures & High-P Request Sequences

• Common “futile” attempts to address behavioral concerns:
  – Detention
  – Missed Recess
  – Students have “silent lunch” to finish work
  – “Rewards” for finishing work – if the learner does not have the skill in his/her repertoire
  – Retention
Interspersal Procedures & Academics

• **Interspersal Techniques:**
  – “**Target**” items/tasks – the skill being taught or developed
  – “**Maintenance**” items/tasks – mastered skills
  – Interspersal procedures mix target and maintenance items for instruction/assessment
  – Example: student’s weekly spelling list consists of 5 target items and 5 maintenance items (from previous week’s list)
  – Maintenance items serve as potential reinforcers to students
  – *Discreet Trial Completion Hypothesis*
    • Item completion is reinforcing due to learning history
    • Increasing discreet easily completed items = denser R+
Why use IP?

- Strength-based approach to addressing non-compliance and disengagement without using punishment
- Targets new skills while revisiting mastered skills (maintenance)
- Demonstrated effective for increasing academic responding and compliance to adult requests
Example of an Interspersional Worksheet

\[ 44 + 52 = \square \]

<table>
<thead>
<tr>
<th>50</th>
<th>51</th>
<th>52</th>
<th>53</th>
<th>54</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>56</td>
<td>57</td>
<td>58</td>
<td>59</td>
</tr>
<tr>
<td>60</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
</tr>
</tbody>
</table>

12 more than 51 is \[ \square \].

Which is bigger?  

\[ \begin{array}{cc}
2 & 68
\end{array} \]
High-Preference Strategy

High-P Strategy:
Designing assignments with a sequence of maintenance tasks preceding a target task
• usually 3 – 5 maintenance tasks to 1 target task

Example: A student needs help on multiplication facts
• Student does not engage in multiplication tasks (too difficult)
• Yet, student has demonstrated mastery of, and a preference for, single-digit addition facts
• During training:

\[
\begin{align*}
2 &+ 1 \\
3 &+ 2 \\
2 &+ 2 \\
7 &\times 2
\end{align*}
\]
High-Preference Strategy

• Can be used for training (if the student cannot engage in the target skill and does not comply with task demands)
  – Not intended to teach new skills alone
  – Must be combined with an instructional method if the target skill is not in the student’s repertoire
    • Discrete Trial Training
High-P Request Sequences

• Can be used during independent work (if the student can successfully engage in the target skill but typically does not engage in the task due to lack of fluency)

• Possible explanations for why High-P works:
  – Premack Principle “If you don’t eat your meat, you can’t have any pudding!”
    • Engaging in undesirable task to access desirable task
    • Also shown to work in reverse
  – Behavioral Momentum: easy item (success) → easy item (success) → easy item (success) difficult (more likely to comply while in momentum)
Determining Target and Maintenance Items

• Identify target skills associated with off-task/non-compliance/disengagement
  – Assess for target and maintenance items
  – Determine criteria
    • Maintenance items can be solved quickly and accurately
      – Latency of 3 seconds
      – 100% accuracy across 3 - 5 trials
    • Target items
      – Latency > 3 seconds
      – Accuracy < 100% across trials
  – Conduct preference assessment for maintenance items
    • Interview
    • Permanent product examination—what items has a student historically completed
    • R+ preference assessment: give choices
    • May not be “simple” problems, but preferred
Creating IP/High-P Assignments

• Choosing between **IP** and **High-P**
  – Interspersal: target, target, target, maintenance
  – High-P: maintenance, maintenance, maintenance, target
  – **Idiosyncratic** to the student
    • Some students may need a denser schedule of R+ (i.e., maintenance items)
    • Some student may need **priming**

• Options: flashcards, worksheets, or electronic format
Monitor Student Success

• **Accuracy**

• **Completion**
  – Number of items

• **Rate**
  – Number of correct items completed in a given time interval

• It is possible that maintenance items may have been misidentified
  – Skipping items
  – Rate of target items not improving

• **Fade** intervention as student shows success
  – 3 maintenance items → 2 maintenance items...
Examples of Interspersal/High-P Research

• Used to increase food acceptance of participants with pediatric feeding disorders (Patel et al., 2006)

• Single-digit multiplication facts (Burns, 2005)

• Independent object labeling (Ormsby & Belfiore, 2009)

• Spelling words (Neef, Iwata, & Page, 1980)

• Compliance to low-probability teacher requests (Belfiore, Lee, Scheeler, & Klein, 2002)

• Compliance to medical requests: taking medication (Harchik & Putzier, 1990)
General Education Classroom Applications of Interspersal Techniques

- When many of the students are not on task when doing independent seat work → add additional maintenance items

- Student who is under challenged by the curriculum and demonstrating off-task behaviors → adding challenging items may improve on-task behavior

- Students reluctant to volunteer answers to complex questions → ask additional questions that students have previously answered correctly

- Behavioral momentum → put easier problems at the start of the assignment to increase on-task behavior
Improving sight word recognition → show a student one unknown word, have the student practice, show a known word

Helping students learn to recognize rimes when onset sounds have been mastered. → every time a student is asked to recognize rime, also asked to say the onset

Helping a student learn to write the letter S → student is also allowed to work on known letters
References


Ormsby, L.M., & Belfiore, P. J. (2009). The task-interspersal procedure has relative effects for teaching object labeling to preschool children with autism or developmental/language delay. Evidence-Based Communication Assessment & Intervention, 3(1), 38-42.

Questions?
Comments?
Concerns?
Epiphanies?