

ERRATA:

Tables 1 and 3 from the paper by J. Tarr and G. Jones, which was published in May, 1997 in the *Mathematics Education Research Journal*, 9(1), 39–59, have been reproduced here with the additional headings Level 3 and Level 4 which were omitted in *MERJ* 9(1).

Table 1

Initial Framework for Assessing Middle School Students' Thinking in Conditional Probability and Independence

	LEVEL 1 (Subjective)	LEVEL 2 (Transitional)
CONDITIONAL PROBABILITY	<ul style="list-style-type: none"> • Recognises when "certain" and "impossible" events arise in replacement and non-replacement situations. • Generally uses subjective reasoning in considering the conditional probability of any event in a "with" or "without" replacement situation. 	<ul style="list-style-type: none"> • Recognises that the probabilities of <i>some</i> events change in a "without replacement" situation. Recognition is incomplete, however, and is usually confined to events that have previously occurred. • May revert to subjective judgments or use inappropriate quantitative measures.
INDEPENDENCE	<ul style="list-style-type: none"> • Unaware that two events may or may not influence each other. • Holds a pervasive belief that they can control the outcome of an event. • Uses subjective reasoning which precludes any meaningful focus on the independence or dependence of events. 	<ul style="list-style-type: none"> • Shows some recognition as to whether consecutive events are related or unrelated. • Frequently uses a "representativeness" strategy, either a positive or negative recency orientation. • May also revert to subjective reasoning.
	LEVEL 3 (Informal Quantitative)	LEVEL 4 (Numerical)
CONDITIONAL PROBABILITY	<ul style="list-style-type: none"> • Keeps track of the complete composition of the sample space in judging the relatedness of two events in both "with" and "without" replacement situations. • Recognises that the probabilities of all events change in a "without replacement" situation, and that none change in a "with replacement" situation. • Can quantify, albeit imprecisely, changing probabilities in a "without replacement" situation. 	<ul style="list-style-type: none"> • Assigns numerical probabilities in "with" and "without" replacement situations. • Uses numerical reasoning to compare the probabilities of events before and after each trial in "with" and "without" replacement situations.
INDEPENDENCE	<ul style="list-style-type: none"> • Recognises when the outcome of the first event does or does not influence the outcome of the second event. In "with replacement" situations, sees the sample space as restored. • Can differentiate, albeit imprecisely, independent and dependent events in "with" and "without" replacement situations. • May revert to the use of a representativeness strategy. 	<ul style="list-style-type: none"> • Distinguishes dependent and independent events in "with" and "without" replacement situations, using numerical probabilities to justify their reasoning.

Table 3

Refined Framework for Assessing Middle School Students' Thinking in Conditional Probability and Independence

	LEVEL 1 (Subjective)	LEVEL 2 (Transitional)
CONDITIONAL PROBABILITY	<ul style="list-style-type: none"> • Recognises when "certain" and "impossible" events arise in replacement and non-replacement situations. • Generally uses subjective reasoning in considering the conditional probability of any event in a "with" or "without" replacement situation. • Ignores given numerical information in formulating predictions. 	<ul style="list-style-type: none"> • Recognises that the probabilities of some events change in a "without replacement" situation. Recognition is incomplete, however, and is usually confined to events that have previously occurred. • <i>Inappropriate use of numbers in determining conditional probabilities. For example, when the sample space contains two outcomes, always assumes that the two outcomes are equally likely.</i> • Representativeness acts as a confounding effect when making decisions about conditional probability. • May revert to subjective judgments.
INDEPENDENCE	<ul style="list-style-type: none"> • Predisposition to consider that consecutive events are always related. • Pervasive belief that they can control the outcome of an event. • Uses subjective reasoning which precludes any meaningful focus on the independence. • Exhibits unwarranted confidence in predicting successive outcomes. 	<ul style="list-style-type: none"> • Shows some recognition as to whether consecutive events are related or unrelated. • Frequently uses a "representativeness" strategy, either a positive or negative recency orientation. • May also revert to subjective reasoning.
	LEVEL 3 (Informal Quantitative)	LEVEL 4 (Numerical)
CONDITIONAL PROBABILITY	<ul style="list-style-type: none"> • Recognises that the probabilities of all events change in a "without replacement" situation, and that none change in a "with replacement" situation. • Keeps track of the complete composition of the sample space in judging the relatedness of two events in both "with" and "without" replacement situations. • Can quantify, albeit imprecisely, changing probabilities in a "without replacement" situation. 	<ul style="list-style-type: none"> • Assigns numerical probabilities in "with" and "without" replacement situations. • Uses numerical reasoning to compare the probabilities of events before and after each trial in "with" and "without" replacement situations. • States the necessary conditions under which two events are related.
INDEPENDENCE	<ul style="list-style-type: none"> • Recognises when the outcome of the first event does or does not influence the outcome of the second event. In "with replacement" situations, sees the sample space as restored. • Can differentiate, albeit imprecisely, independent and dependent events in "with" and "without" replacement situations. • May revert to the use of a representativeness strategy. 	<ul style="list-style-type: none"> • Distinguishes dependent and independent events in "with" and "without" replacement situations, using numerical probabilities to justify their reasoning. • Observes outcomes of successive trials but rejects a representativeness strategy. • Reluctance or refusal to predict outcomes when events are equally likely.