Psychiatry Milestones-Based Learning Trajectories: A Multisite Collaborative Study

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MOTIVATION

- The Next Accreditation System (NAS) by the Accreditation Council for Graduate Medical Education (ACGME) has prompted residency programs to transform the training and assessment of learners in graduate medical education.[1,2]

- To meet this challenge, psychiatry assessment tools, including rotation evaluation forms, cognitive tests, and clinical skills assessments have been developed to align with the Psychiatry Milestones (22 subcompetencies).[3]

- Milestones are reported to the ACGME every six months, reflecting developmental progress of learners.

- Trended milestone levels reported to ACGME every six months could serve as learner outcome data that can be used to measure learning trajectories. To date, only hypothesized learning trajectories exist, without empirical evidence supporting different patterns.

- Using the multisite collaboration, retrospective data from four institutions can allow identifying different patterns of learning trajectories in psychiatry (i.e., number and types of learning trajectories), which can serve to target and remediate learners who may show signs of difficulty in their training or achieve early readiness for unsupervised practice.

- Examining learning trajectories can form a contribution to psychiatry education that meets the educational goals of the NAS and prepares better psychiatrists. See Figure 1 for hypothesized learning trajectories in psychiatry.

- Identifying learning trajectories will also allow study of factors that may mediate their learning progress.

PURPOSE

- This study investigates how psychiatry residents progress in their training with respect to their milestone levels, targeting different types of developmental learning trajectories.

- We aim to identify patterns of learning trajectories that can yield meaningful intervention and remediation for psychiatry residents.

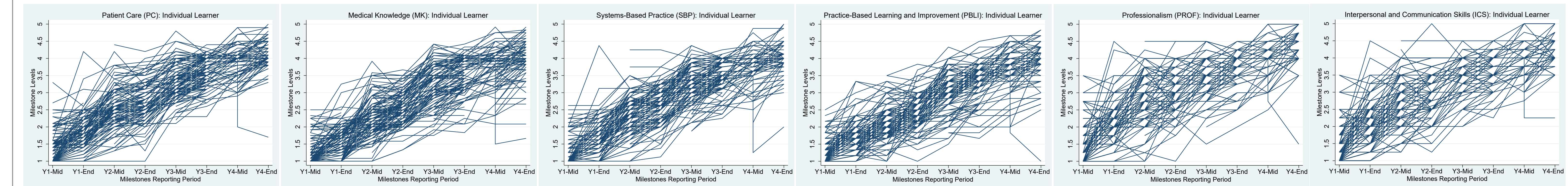### Figure 1. Hypothesized Learning Trajectories in Psychiatry
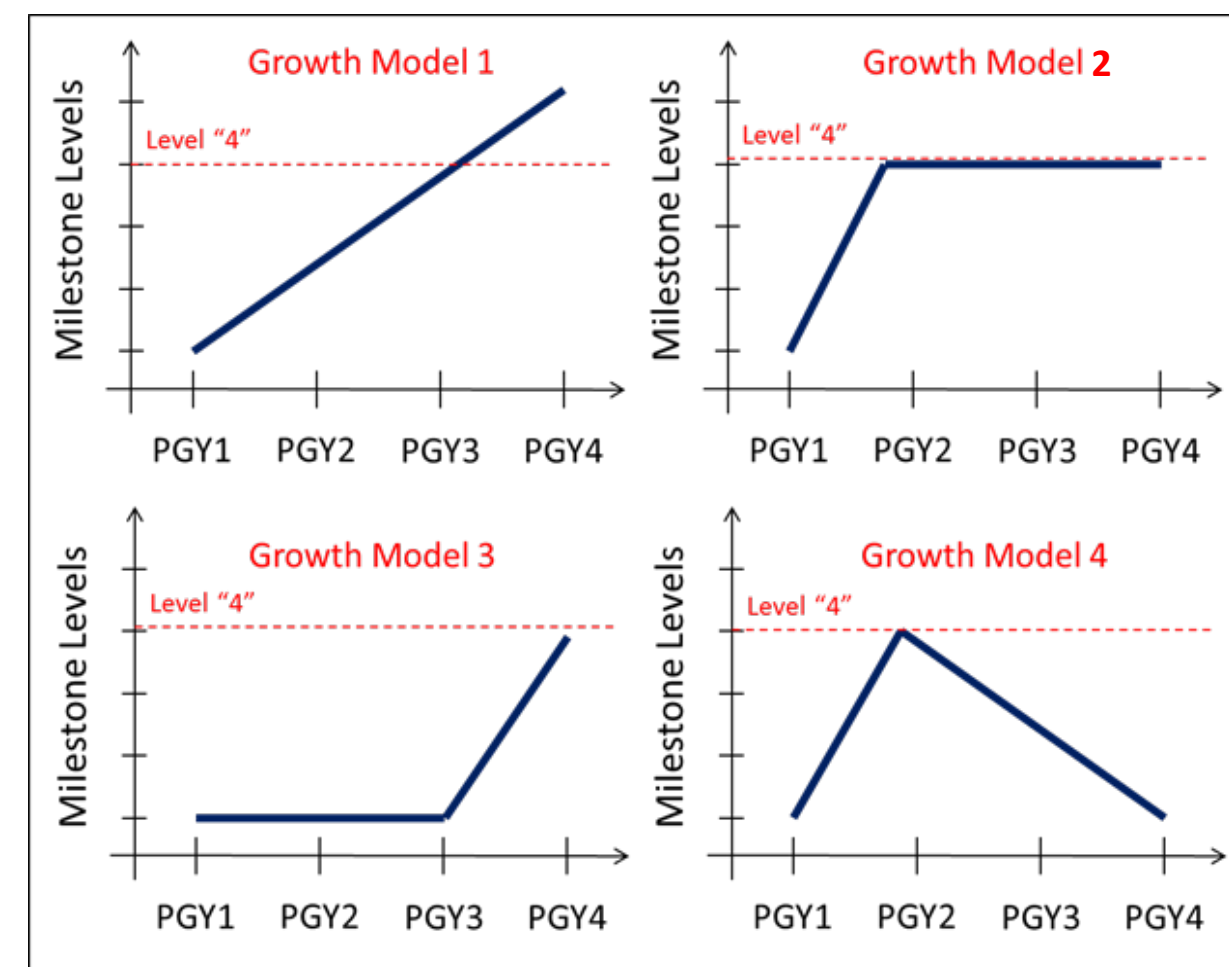
METHODS

- Data: Multisite data from The Chicago Consortium were collected, from July 2014 to June 2019. Cohorts of psychiatry residents (n = 185 residents; 4 psychiatry residency programs) were used to evaluate learning trajectories.

- Analysis: Descriptive statistics were used to examine trends in data. Milestone levels were averaged by competencies: Patient Care (PC), Medical Knowledge (MK), Systems-Based Practice (SBP), Practice-Based Learning and Improvement (PBLI), Professionalism (PROF), and Interpersonal and Communication Skills (ICS). Mixed-effects longitudinal regression methods were used to examine longitudinal learning trajectories of residents. Latent class analysis was used to identify learning trajectories using information criteria and classification as measures of statistical model fit.
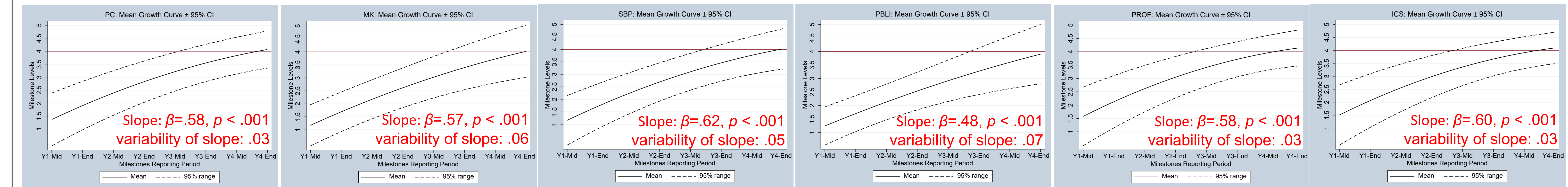
RESULTS

- Data from residents showed significant improvement in milestones levels across training years and reporting periods, $p < .001$. Patterns of developmental progress varied by competency. See Figures 2 and 3.

- SBP had highest rate of growth. PBLI had slowest rate of growth; however, it had the greatest variability in rates of developmental progress among learners. PROF had higher milestone rating at baseline (PGY-1).

- Number of learning trajectories varied by competency. Mixture growth models yielded 3 learning trajectories for PC, MK, and PBLI; SBP, PROF, and ICS had 2 learning trajectories. See Figure 4.
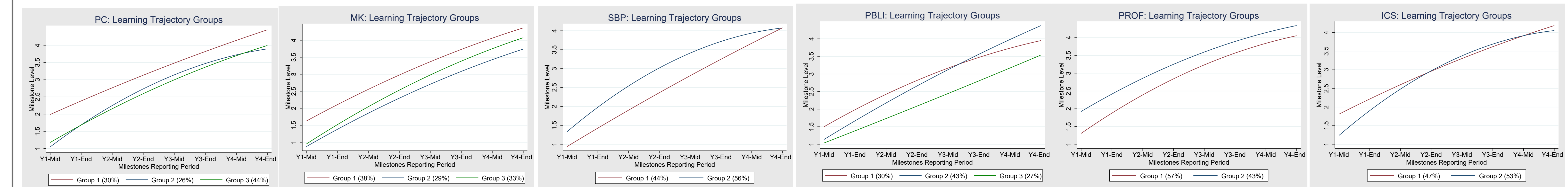
Figure 2. Plots of Individual Developmental Trajectories ($n = 185$ residents; 4 psychiatry training programs)

Figure 3. Projected Growth Curves: Mean ± 95% CI

PC: Slope: β=.58, $p < .001$ variability of slope: .03
MK: Slope: β=.57, $p < .001$ variability of slope: .06
SBP: Slope: β=.62, $p < .001$ variability of slope: .05
PBLI: Slope: β=.48, $p < .001$ variability of slope: .07
PROF: Slope: β=.58, $p < .001$ variability of slope: .03
ICS: Slope: β=.60, $p < .001$ variability of slope: .03

Figure 4. Projected Learning Trajectory Groups" Mixture Growth Curve Models

DISCUSSION

- Competency frameworks in education include a longitudinal component by design, prompting psychiatry educators to examine how learners develop and meet thresholds for competence.

- Using multisite data, this study showed varying developmental trajectories of residents.

- Learner's early growth patterns can be used to project future growth. For example, trends in PBLI (Group 3 learners) can alert early remediation.

- Learning trajectories in psychiatry can be used to understand residents' developmental progress which can be tailored to create more individualized learning plans.

REFERENCES

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3. Lloyd RB, Park YS, Tekian A, Marvin R. Understanding assessment systems for clinical competency committee decisions: Evidence from a multisite study of psychiatry residency training programs. *Acad Psychiatry*. 2019; doi: 10.1007/s40596-019-01168-x