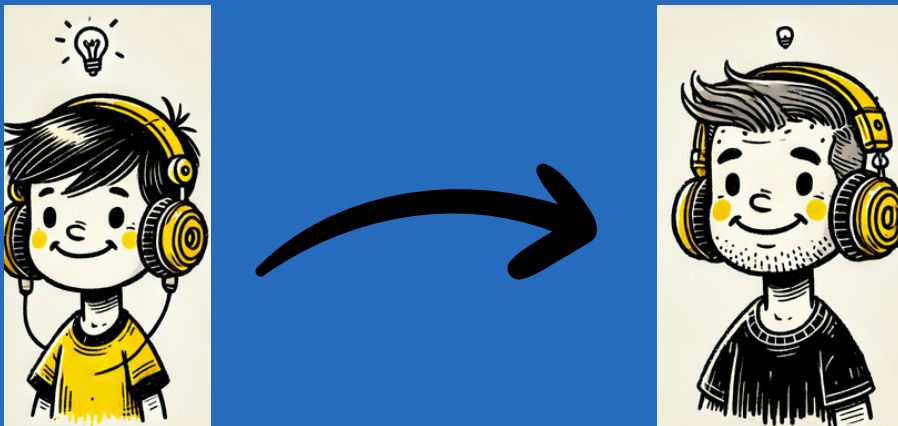# FROM BEATS TO BEING

ADOLESCENTS' QUEST FOR MUSICAL IDENTITY

INTRODUCTION

- **Pivotal Period:** Adolescence is a key period for identity formation, heavily influenced by media, especially music
.
- **RS Influence & Gap:** Recommender Systems (RS) profoundly shape music exposure but currently lack consideration for adolescent developmental needs.
- **Research Question:** We don't fully understand how identity development manifests in real-world behavioral data over time.
- **Study Aim:** To address this gap by applying James Marcia's Identity Status Theory to adolescents' longitudinal music listening data, identifying how they traverse distinct developmental stages.

FORMING AN IDENTITY

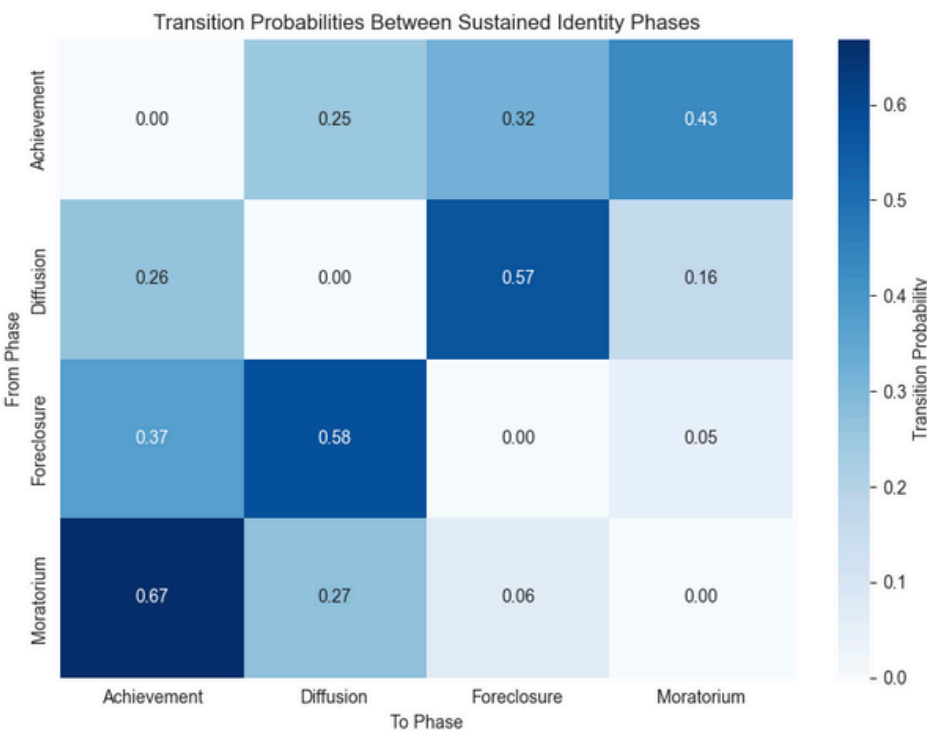- **Marcia's Identity Status Theory** provides a model for identity formation with four statuses
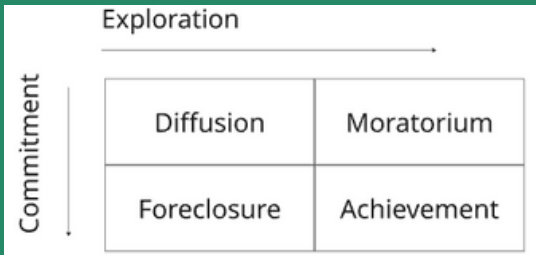
- People are categorized into one of the four phases depending on their exploration and commitment values

METHODOLOGY

Dataset:
- listening set of events from the platform Last.FM

Preprocessing:
- Only contains users with continuous listening periods from at least age 14 to 18.
- Reduced over 2,000 genres to the top 40 most prevalent ones for tractability.
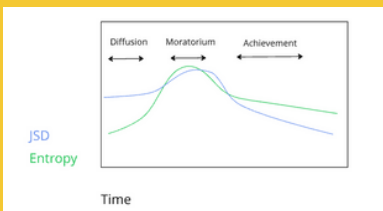
Metrics
- **Exploration (Shannon Entropy):** Quantified diversity of genres within a time window
  - higher entropy = more exploration
- **Commitment (JSD):** Measured stability of genre distribution between consecutive time windows
  - lower JSD = more commitment

Identity Status Classification:
- **Cutoffs:** Median values of Entropy and JSD from all time windows defined "Low" vs. "High" for each metric.
- **Rules:** Applied specific rules (e.g., Low Exploration + Low Commitment = Diffusion) to classify each time window.

Trajectory Analysis:
- **Sustained Phases:** Defined as maintaining the same status for 3 consecutive time windows.
- **Analyses:** Examined phase participation, typical progression, direct transitions between statuses, and common overall trajectories.

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RESULTS

- **Sustained Phases:** Sustained engagement is less common, especially for Foreclosure (7,00%) and Moratorium (11,37%) compared to Achievement (19.09%) and Diffusion (23.63%)

- **Typical Starting Points:** Moratorium (26.21%) and Diffusion (37.00%) are common first sustained phases
- **Achievement as Endpoint:** Achievement is the most common final sustained phase (40.78%)

- **Strong Moratorium → Achievement Transition:** A highly probable transition (0.67) from Moratorium to Achievement observed, indicating exploration often leads to resolution.

- **Reciprocal Diffusion ↔ Foreclosure:** Frequent bidirectional transitions between Diffusion and Foreclosure highlight re-evaluation between uncertainty and premature commitment.
- **Non-Linear Cycles:** Repeating developmental cycles (e.g., Diffusion → Foreclosure → Diffusion, Achievement → Moratorium → Achievement) confirm the recursive nature of identity formation.

Identity Status	At Least One Time Window		Sustained Phase	
	User Count	Percentage	User Count	Percentage
Achievement	969	93.53%	614	59.27%
Diffusion	842	81.27%	601	58.01%
Foreclosure	875	84.46%	385	37.16%
Moratorium	947	91.41%	402	38.80%

Table 1: Comparison of User Participation in Raw vs. Sustained Identity Phases

DISCUSSION

Bridging Theory & Behavior:
- Music listening patterns offer a novel behavioral lens to interpret James Marcia's identity development theory, complementing traditional self-report methods.

Phase Stability Insights:
- Moratorium and Foreclosure are common but often transient, aligning with their theoretical descriptions as states of active search or potentially unstable, unexplored commitments.

Typical Starting Points:
- users generally start in phases of low commitment (Diffusion and Moratorium) and end in phases of high commitment (Achievement, Foreclosure)

Non-Linear Cycles:
- Repeating developmental cycles (e.g., Diffusion → Foreclosure → Diffusion, Achievement → Moratorium → Achievement) confirm the recursive nature of identity formation

- **Implications for Recommender Systems:** Understanding a user's identity phase can guide RS design to be developmentally supportive.
  - **Moratorium:** Recommend genre diversity and novelty to support exploration.
  - **Achievement:** Prioritize content that deepens established preferences.

Adaptive Systems:
- RS should remain flexible and support cyclical re-exploration (like MAMA-cycles) rather than locking users into static profiles.

CONCLUSION

Dynamic Identity Development:
- Adolescent identity formation through music is dynamic and non-linear, with distinct behavioral phases revealed by Entropy and JSD.

Novel Research Approach:
- This study demonstrates the potential of passive digital data to provide insights into complex human development

Key Transitions Identified:
- Patterns show a general progression from lower-commitment phases (Diffusion, Moratorium) towards more stable Achievement, but with frequent recursive movements.