

Co-regulated online learning: Formative assessment *as learning*

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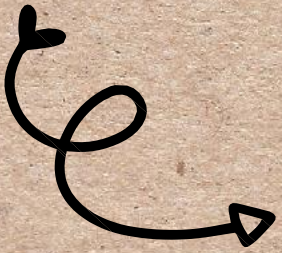
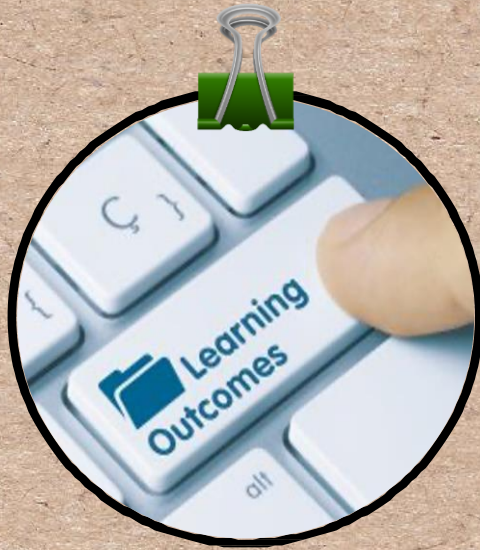
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Outline

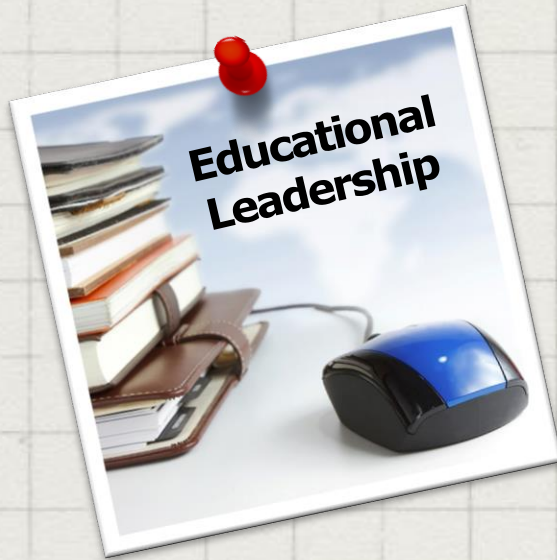


Learning Outcomes

- Differentiate affective domain learning
- Understand what our research project has done
 - Interpret our conceptual framework
 - Consider *theoretical playfulness* (Thornberg, 2012)
- Evaluate our key performance indicators of online learning
- Recognize the value of formative assessment as learning



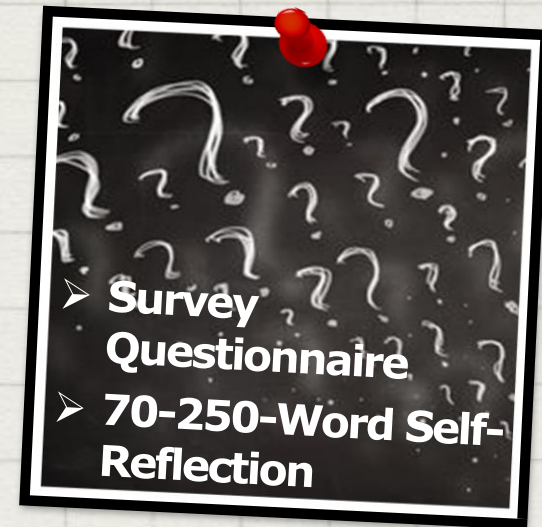
Research Intro



**Online Doctoral
Program**



Two Courses



Research Project

Methods & Design

Participants/Procedures



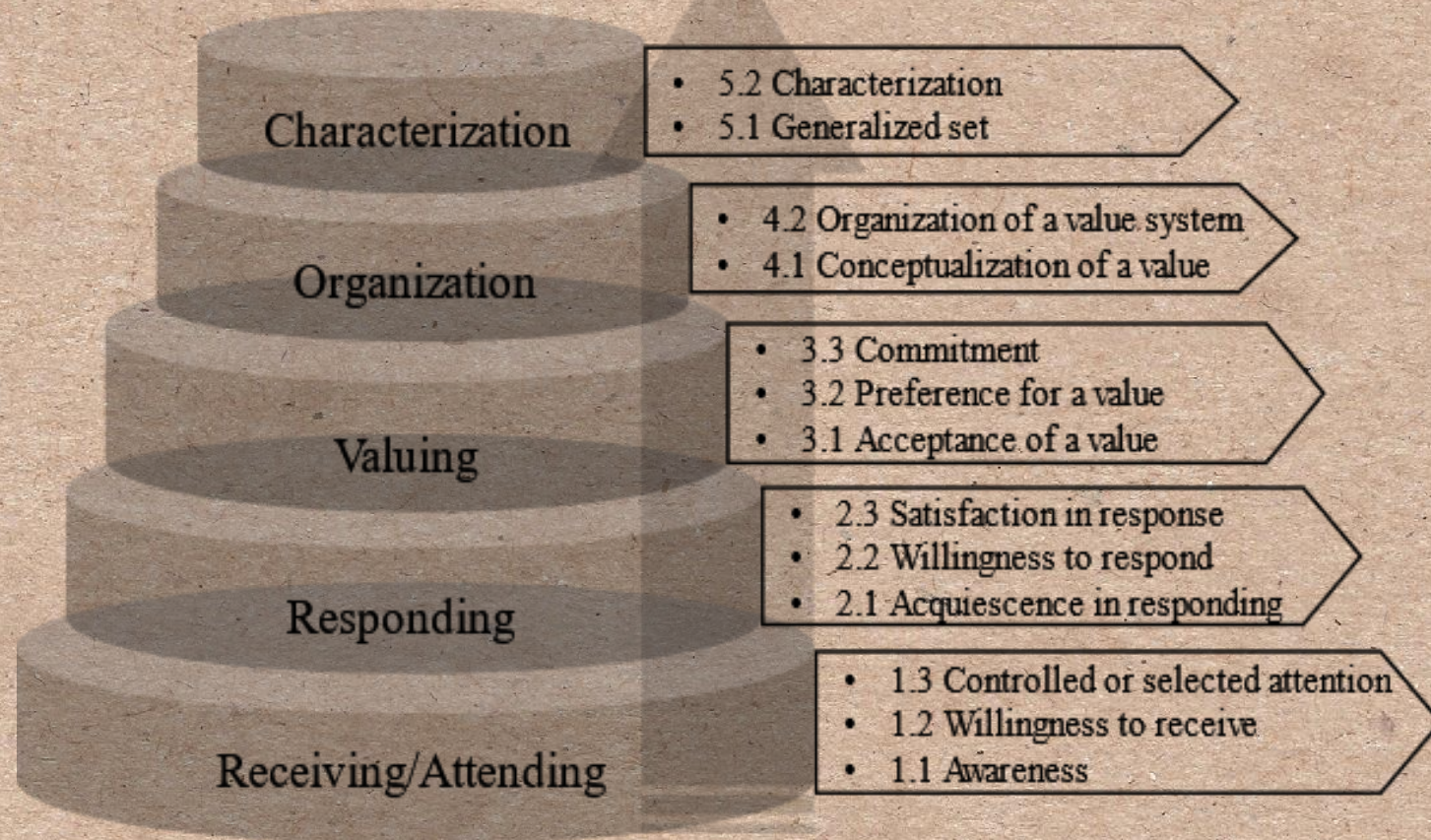
Online doctoral coursework: Educational Leadership

- 71% women, 81% K12, 15% higher Ed
- 2 successive courses, four sequential cohorts
- Schneider & Preckel (2017) study provided motivation for frequent formative assessment

Formative Assessment Tasks

- Relative agreement with 5 elements of instructional design
 - Ordered-response questionnaire
- Reflective essays
 - Open prompt
 - Scored (QCA) against the GUALS
 - Coders looked for emotional cues in the text
 - Coders looked for attitudinal cues in the text

The Affective Learning Domain

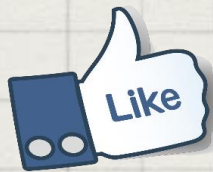


Note: Image used with permission from Song et al. (2021)

Five Levels of Evaluation

LEVEL 1

Did they like it?



--REACTION

LEVEL 2

Did they learn it?



--LEARNING

LEVEL 3

Will they use it?



--TRANSFER

LEVEL 4

Will it matter?



--RESULTS

LEVEL 5

Was it worth our investment?



--Return on investment (ROI)



Five levels of evaluation

(Kirkpatrick, 1994; Simonson, et al., 2015)

Weekly Formative Assessment

LEVEL 1 --REACTION

Did they like it?

The learning activities were effective.

Instructions were clear and easy to follow.

I learned something I had not known before this week.

The learning activities were engaging.

I struggled with comprehension for this week's learning activities.



Five levels of evaluation

(Kirkpatrick, 1994; Simonson, et al., 2015)

Weekly Formative Assessment

LEVEL 2 -- *LEARNING*

Did they learn it?

Reflect on the most
useful constructs from
the course learning
activities



Five levels of evaluation

(Kirkpatrick, 1994; Simonson, et al., 2015)

Basic Emotions

- Classic emotions-research journal articles

- Lead researcher's reviews of two classic edited volumes on emotions research

- Lead researcher's review of one research-based *self-help* (non-academic press) book on emotions

- Updated research articles (for example, confusion) as necessary

Coders had lists of 237 emotions (emotion-trees) which included between five and 17 *basic emotions* and some *emotion-states*.

Katz's Functional Attitudes



Utilitarian:

Maximizes the utility of the *object of appraisal*; the end goal is to satisfy needs/wants/desires.



Value-Expressive:

Provides agency (*voice* in the original) framework to remain consistent with one's internal values; does not promote adapting to an environment nor does this attitude care about impression management.



Ego-Defensive:

Provides pathways to acknowledge unpleasantness of the world (or self) while protecting one's self-worth




Knowledge:

Serves to gain insight on how the world is structured and how things operate in complex environments; learning is the end, in and of itself.



Griffith University Affective Learning Scale (GUALS)

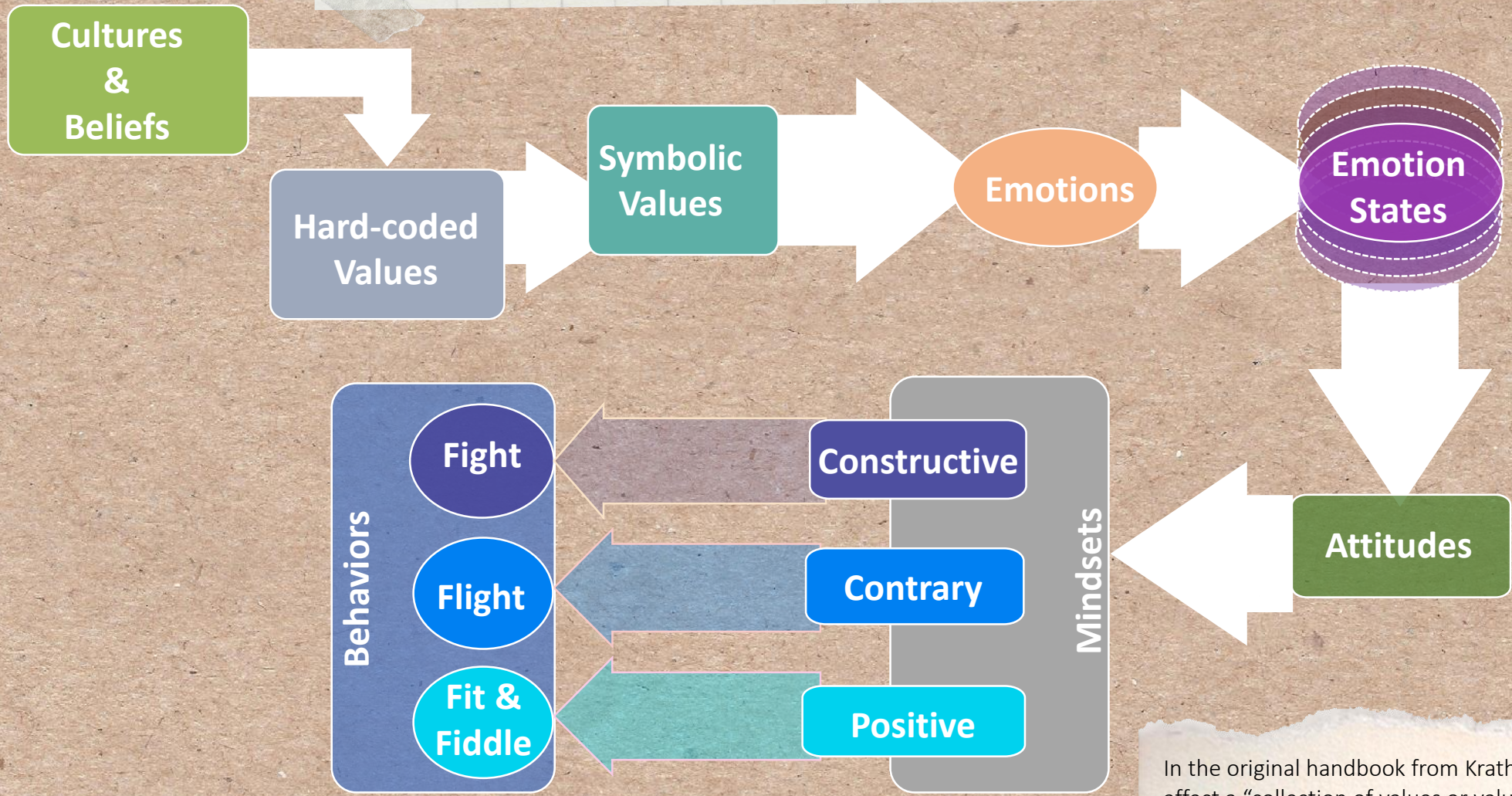
1	2	3	4	5	6	7
No evidence of affective learning	'Receiving'	'Responding'	'Valuing'	'Organisation'	'Characterisation'	



Note: Image used with permission from Rogers et al. (2018)

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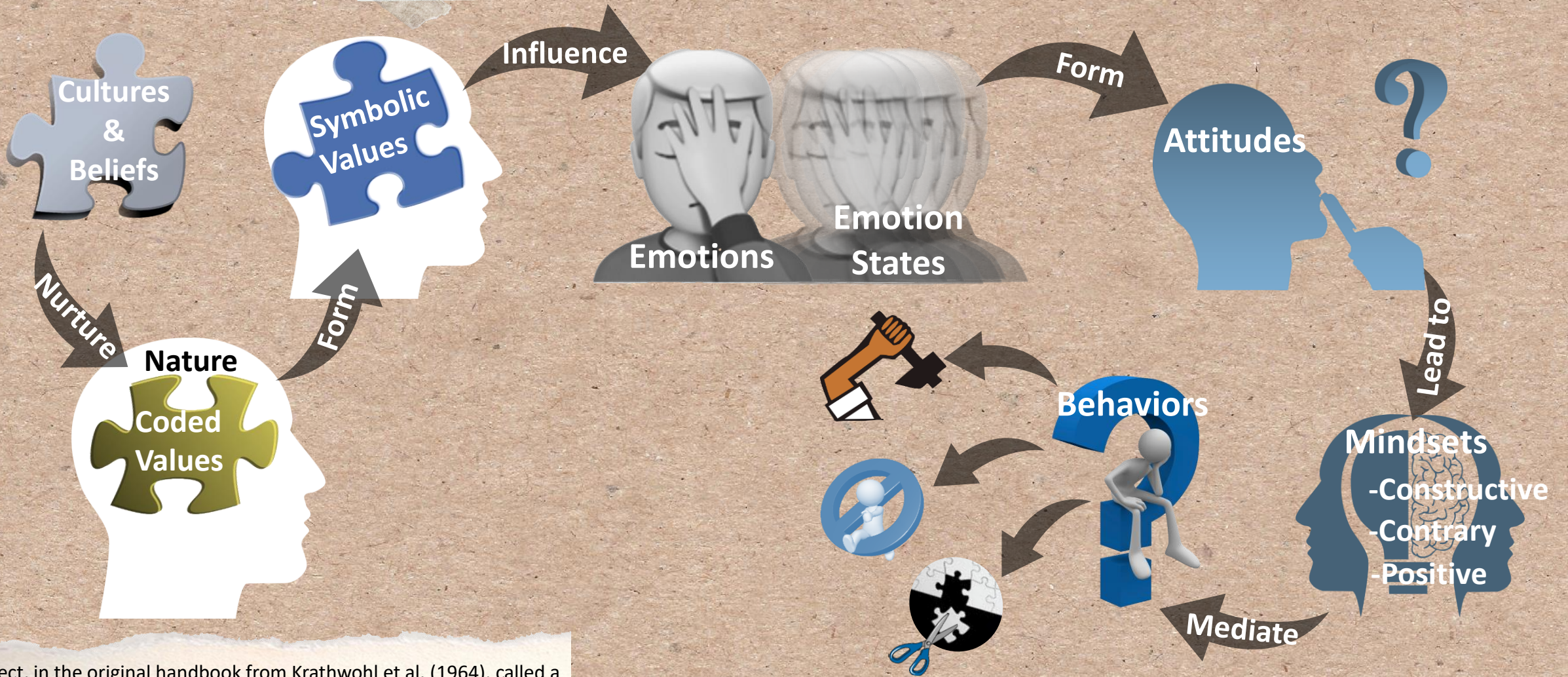
Conceptual Framework



In the original handbook from Krathwohl et al. (1964), called affect a "collection of values or value sets" (pp. 158-159)

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Conceptual Framework



Affect, in the original handbook from Krathwohl et al. (1964), called a "collection of values or value sets" (pp. 158-159)

Regression Models & Kruskal-Wallis Test Results

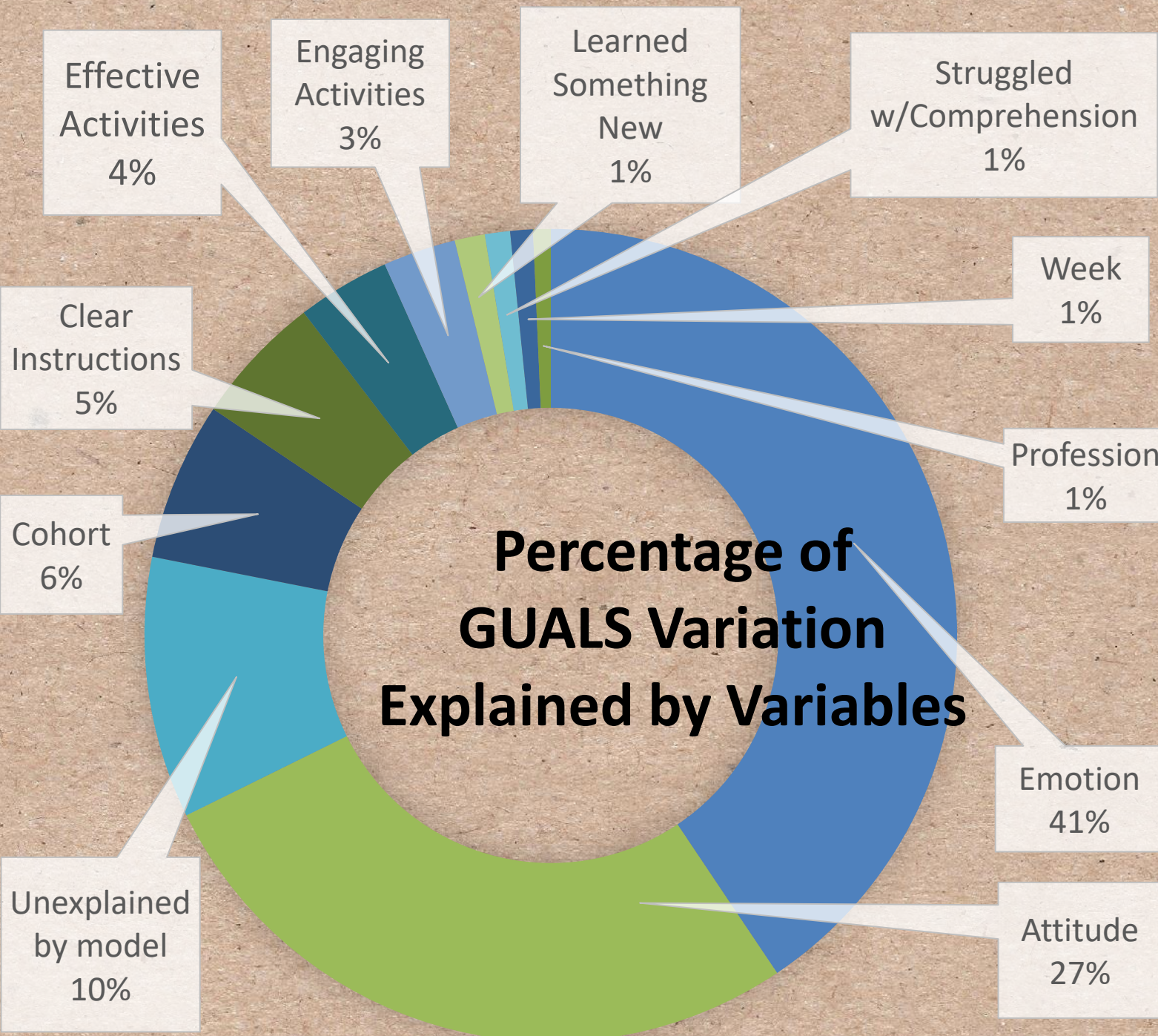
Model (with 10 variables) explains 89.6% variation in GUALS

➤ Variables are selected based on significant KW test result ($p=.000$). In other words, students in different cohorts, courses, and assessment weeks have significantly different medians for each variable ($p=.000$)

Primary main effects:

- "contentment vs anxiety" for emotion
- "knowledge vs ego-defensive" for attitude
- "completely vs moderately agree" for assessment questions

Percentage of GUALS Variation Explained by Variables



Key Performance Indicators

Variable	Kruskal-Wallis Test Result	Effect-size Estimate	Main Effect (Post-hoc Mann Whitney U.)
Effective Activities	$H(3, N = 2287) = 88.55, p = .000$	$\eta^2 = .037$	Completely Agree vs. Moderately Disagree
Clear Instructions	$H(3, N = 2291) = 113.90, p = .000$	$\eta^2 = .052$	Moderately Disagree vs. Completely Agree
Learned Something New	$H(3, N = 2294) = 31.65, p = .000$	$\eta^2 = .012$	Completely Agree vs. Moderately Agree
Engaging Activities	$H(3, N = 2290) = 73.67, p = .000$	$\eta^2 = .029$	Moderately Agree vs. Completely Agree
Struggled w/Comprehension	$H(3, N = 2295) = 28.35, p = .000$	$\eta^2 = .010$	Completely Disagree vs. Moderately Agree
Emotion	$H(8, N = 1165) = 481.79, p = .000$	$\eta^2 = .406$	Contentment vs. Anxiety (primary) Contentment vs. Satisfaction (secondary) Contentment vs. Apathy (tertiary)
Attitude	$H(3, N = 1163) = 319.66, p = .000$	$\eta^2 = .271$	Knowledge vs. Ego-defensive (p) Knowledge vs. Utilitarian (s) Value-expressive vs. Ego-Defensive (t)



Any questions?
yes!



Methods & Design

Approaches and Instruments



Action research

- Began as 1st-person, solo
- Becoming *action science* because we are identifying causal relationships (McNiff, 2017)

Kirkpatrick's (1994) Levels of Evaluation

Self-designed Questionnaire (DeCastellarnau, 2018; Dillman, 2008; Krosnick & Presser, 2010)

Dialogic mindset (Bushe & Marshak, 2016) & **Meaning-centered learning** (Kovbyasuk & Blessinger, 2013) are postmodern, critical constructivist approaches and lenses.

Affective domain learning (Krathwohl, et al., 1964; **Basic Affect** (Arora & Sharma, 2018).

The Griffith University Affective Learning Scale (GUALS; Rogers, et al., 2018)

Methods & Design

Contributions to Conceptual Framework



Triarchic Mind Theory (Sternberg, 1985, 93, 97, 99)

Contextual subtheory; practical intelligence
Experiential subtheory; creative intelligence
Componential subtheory; analytical intelligence

Functional Attitude Theory (Katz, 1960)

Neofunctional Attitude Theory (Herek, 1986, 87)

Symbolic Interactionism (Blumer, 1964; Carter & Fuller, 2016; Meltzer & Petras, 1970)

Basic, Dimensional, & Appraisal Emotions

theories (Izard, 2007, & 2010); McLaren, 2010; Niculescu, et al., 2015; Ortony & Turner, 1990; Ortony, 2022; Panksepp 2007, 20015; Panksepp & Watt, 2011; Plutchik, 2001; Shaver, and Tancredy, 2001; Tracy, 2014; Tyng, et al., 2017)

Neurobiology of Values (Celeghein et al., 2017; Clark et al., 2009; Jankowski & Takahashi, 2014; Li et al., 2022; Padoa-Schioppa, 2011, Panksepp, 2007)

REFERENCES AND ADDITIONAL READING MATERIALS



REFERENCES SPECIFICALLY TELLING THIS PROJECT'S STORY

Nix, V., Shelton, K. and Song, M. (2022), "Implementing Affective Learning Outcomes Through a Meaning-centered Curriculum", Sengupta, E. and Blessinger, P. (Ed.) *ICT and Innovation in Teaching Learning Methods in Higher Education (Innovations in Higher Education Teaching and Learning, Vol. 45)*, Emerald Publishing Limited, Bingley, pp. 65-88. <https://doi.org/10.1108/S2055-364120220000045005>

Nix, J. V., Zhang, M., & Song, L. M. (2022). Co-regulated online learning: Formative assessment as learning. [*Intersection: A Journal at the Intersection of Assessment & Learning* 3\(2\), 36297.](#)

Song, L. M., Nix, J. V., & Levy, J. D. (2021). Assessing Affective Learning Outcomes through a Meaning-Centered Curriculum. [*Proceedings of the AALHE 2021 Annual Conference, 15–37.*](#)

SPECIAL THANKS!



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