Cross-Cultural Comparisons of Surgency, Negative Affect, and Regulation: Summary across Ages and Investigations



Samuel P. Putnam
Bowdoin College

Maria A. Gartstein
Washington State U.

Culture and Temperament

- The pervasive nature of culture makes it a unique lens for examining relationships between individuals and their environment.
- With some exceptions (e.g., Super & Harkness), most cross-cultural studies have focused on only two to four cultures. This limits confidence in the role of societal processes suggested as contributors to cross-cultural differences.
- Also, several studies are of a single dimension (e.g., shyness, Chen et al.) or examine constructs that may not apply across different ages.

Rothbart Family of Fine-Grained Instruments

- Include scales for constructs developed within multiple perspectives (e.g., Thomas & Chess, Goldsmith & Campos)
- Instruments for all life stages (Infant, Early Childhood, Childhood, Adolescence, Adult)
- Each contains between 14-20 scales
    - Some scales common across age (e.g., Activity Level, Frustration)
    - Some stage specific (e.g., Vocal Reactivity in infancy; Activation Control in adolescence and adult)

Factor Structure of Fine-Grained Temperament

Although subtle differences in structure are apparent between instruments (e.g., Putnam et al., 2002) and cultures (e.g., Gartstein et al., 2005), considerable consistency exists regarding three broad factors:

- Surgency:
  - Activity Level, High-Intensity Pleasure, Impulsivity, Sociability, etc.
  - Similar to Extraversion

- Negative Affectivity
  - Frustration, Sadness, Discomfort, etc.
  - Similar to Neuroticism

- Orienting/Regulatory Capacity/Effortful Control
  - Attentional focus at all ages
  - After toddlerhood, Inhibitory Control
  - Through childhood, Cuddliness and Low-intensity Pleasure
  - In adolescence and adulthood, Activation Control
  - Similar to Conscientiousness

Goal of Current Exercise

- Consolidate cross-culture data on temperament assessed with Rothbart measures across age and study

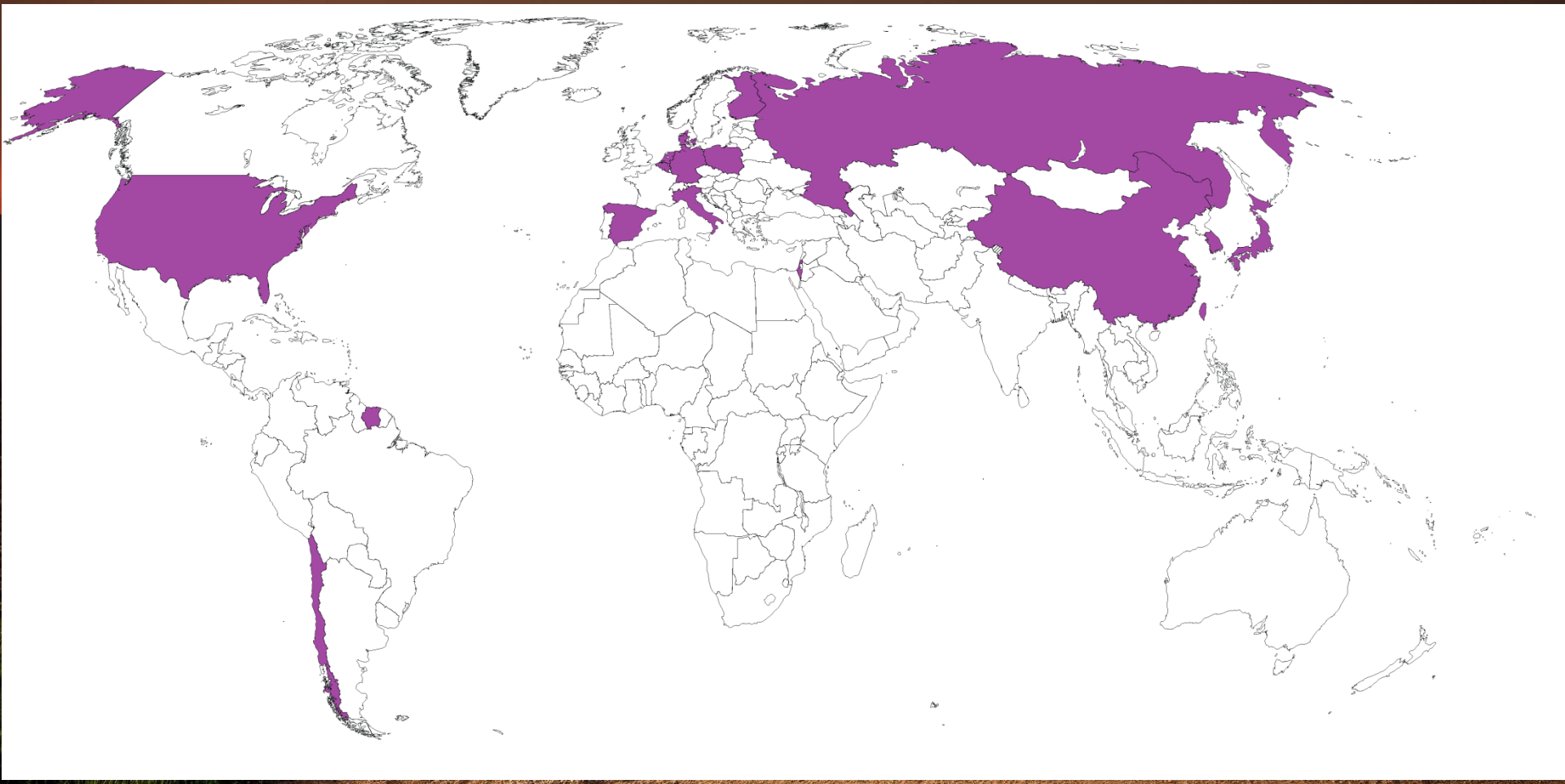
- Explore variables from other cross-cultural work in relation to summarized differences

Temperament Data Sources

- 10 published and 7 unpublished studies on 18 countries
  - Infants (IBQ-R): 10 studies (8 published): Finland*, China*, Spain*, Japan, Poland, Russia, Israel, Italy, Netherlands, Belgium*
  - Toddlers (ECBQ): 5 studies (2 published): Italy, Japan, Russia, Belgium*, Germany, Denmark, Chile, Korea, Poland
  - Children (CBQ): 3 studies (2 published): China, Finland, Curacao, Germany, Netherlands, Suriname, Taiwan
  - Adults (ATQ): 2 studies (1 published): Belgium, Chile, Finland

*Not all scales administered (e.g., IBQ, not IBQ-R used)

Cultures Represented



Data Management

- Cohen's D (effect size), with U.S. scores as comparison group, calculated for scale scores.
- Factor scores created by averaging D scores
  - "Common" (age-universal) for any instrument
    - Surgency: High-Intensity Pleasure, Approach*, Activity Level*
    - Negative Affectivity: Frustration, Sadness, Fear, Discomfort#
    - Regulatory Capacity/Effortful Control: Attention Control, Low-Intensity Pleasure*, Inhibitory Control#
  - Also calculated "Full" (age-specific) factor scores for relevant instrument (shown in parenthesis)
    - (e.g., IBQ-R Surgency score = mean of Approach, Vocal Reactivity, High Intensity Pleasure, Smiling and Laughter, Activity Level, and Perceptual Sensitivity)
- For countries represented in multiple studies/ages, averaged scores across the studies

*Not on ATQ #Not on IBQ-R

Results: Surgency

IBQ-R

China .55 (.24)
Israel .47 (.39)
U.S.A .00 (.00)
Spain -.03 (.06)
Poland -.07 (.00)
Finland -.11 (.33)
Russia -.19 (-.28)
Japan -.19 (-.31)
Belgium -.28 (-.09)
NL -.44 (-.22)
Italy -.62 (-.41)

ECBQ

Denmark .35 (.41)
Chile .17 (.07)
Italy .01 (.09)
U.S.A. .00 (.00)
Korea -.05 (-.13)
Poland -.14 (-.21)
Germany - .15 (-.01)
Japan -.20 (-.17)
Russia -.20 (-.18)
Belgium -.36 (-.29)

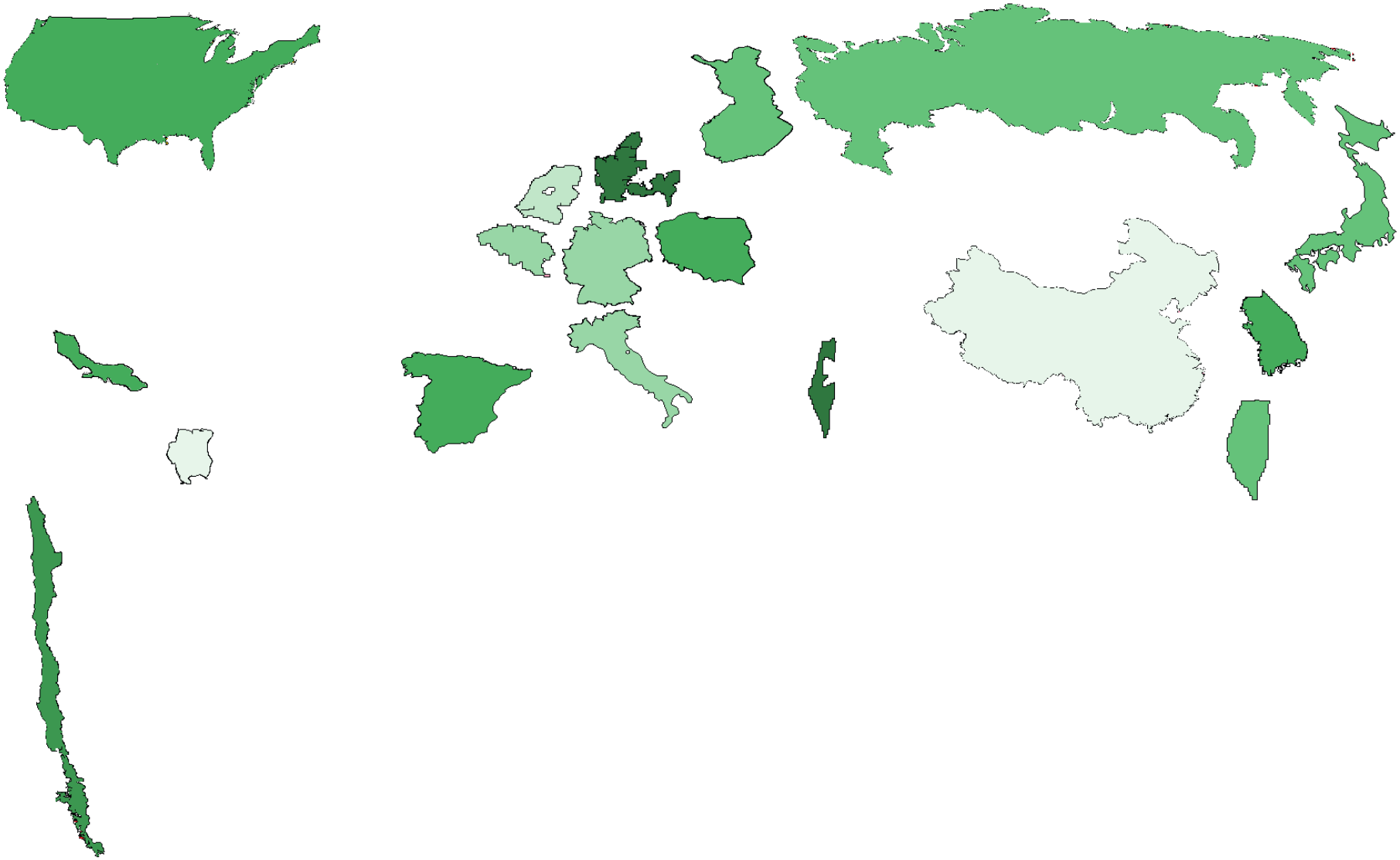
CBQ

U.S.A. .00 (.00)
Finland -.02 (-.05)
Suriname -.05 (-.01)
Taiwan -.22 (-.22)
Germany -.40 (-.16)
NL -.60 (-.26)
Curacao -.86 (-.61)
China -2.13 (-1.42)

ATQ

Chile m (.08)
U.S.A. .00 (.00)
Finland -.04 (-.01)
Belgium m (-.37)

Surgency



Results: Negative Affectivity

IBQ-R

Japan .39 (.42)
Russia .28 (.28)
China .54 (.19)
Spain .21 (.18)
Poland .06 (.18)
Italy .16 (.12)
U.S.A. .00 (.00)
Israel .04 (-.11)
Finland -.41 (-.39)
Belgium -.48 (-.48)
NL -.78 (-.81)

ECBQ

Chile .68 (.58)
Poland .36 (.38)
Korea .43 (.38)
Japan .22 (.25)
Italy -.04 (.18)
Russia .07 (.14)
Germany .30 (.13)
U.S.A. .00 (.00)
Belgium -.29 (-.32)
Denmark -.69 (-.86)

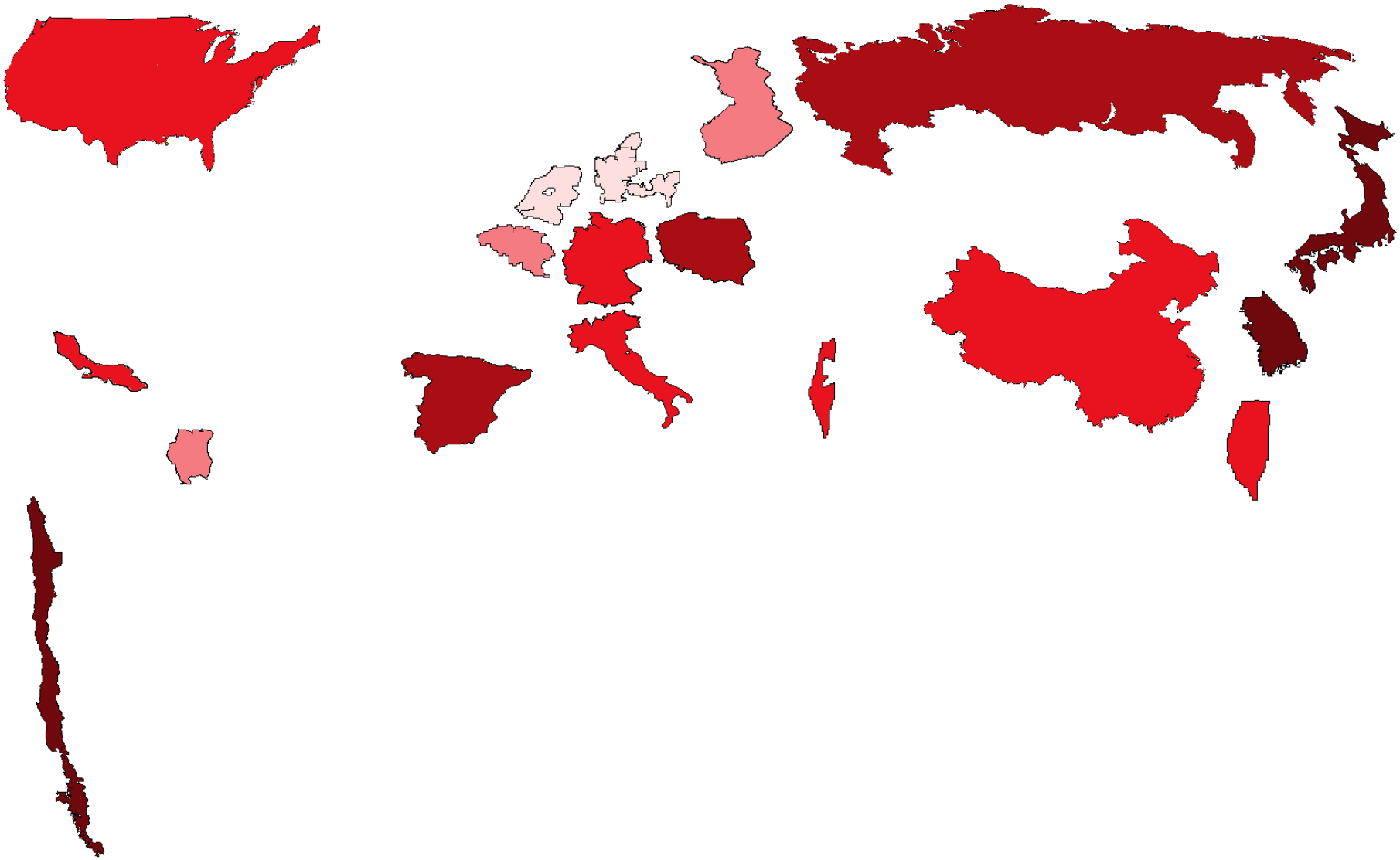
CBQ

Taiwan .01 (.11)
U.S.A .00 (.00)
Suriname -.05 (-.01)
China-.38 (-.02)
Germany -.19 (-.10)
Curacao -.44 (-.38)
Finland -.52 (-.49)
NL -.61 (-.53)

ATQ

Chile m (.23)
U.S.A. .00 (.00)
Belgium m (-.09)
Finland -.21 (-.21)

Negative Affectivity



Results: Regulatory Capacity

IBQ-R

China .79 (.65)
Finland .68 (.62)
Israel .15 (.44)
Spain .15 (.20)
NL .13 (.82)
Russia .12 (.13)
U.S.A. .00 (.00)
Belgium -.10 (.00)
Italy - .32 (-.07)
Japan -1.18 (-.40)

ECBQ

Denmark .32 (.52)
Belgium .32 (.28)
Korea .31 (.30)
Germany .11 (.19)
Chile .01 (.07)
U.S.A. .00 (.00)
Italy -.10) (-.00)
Russia -.10 (-.07)
Poland -.18 (-.15)
Japan -.27 (-.31)

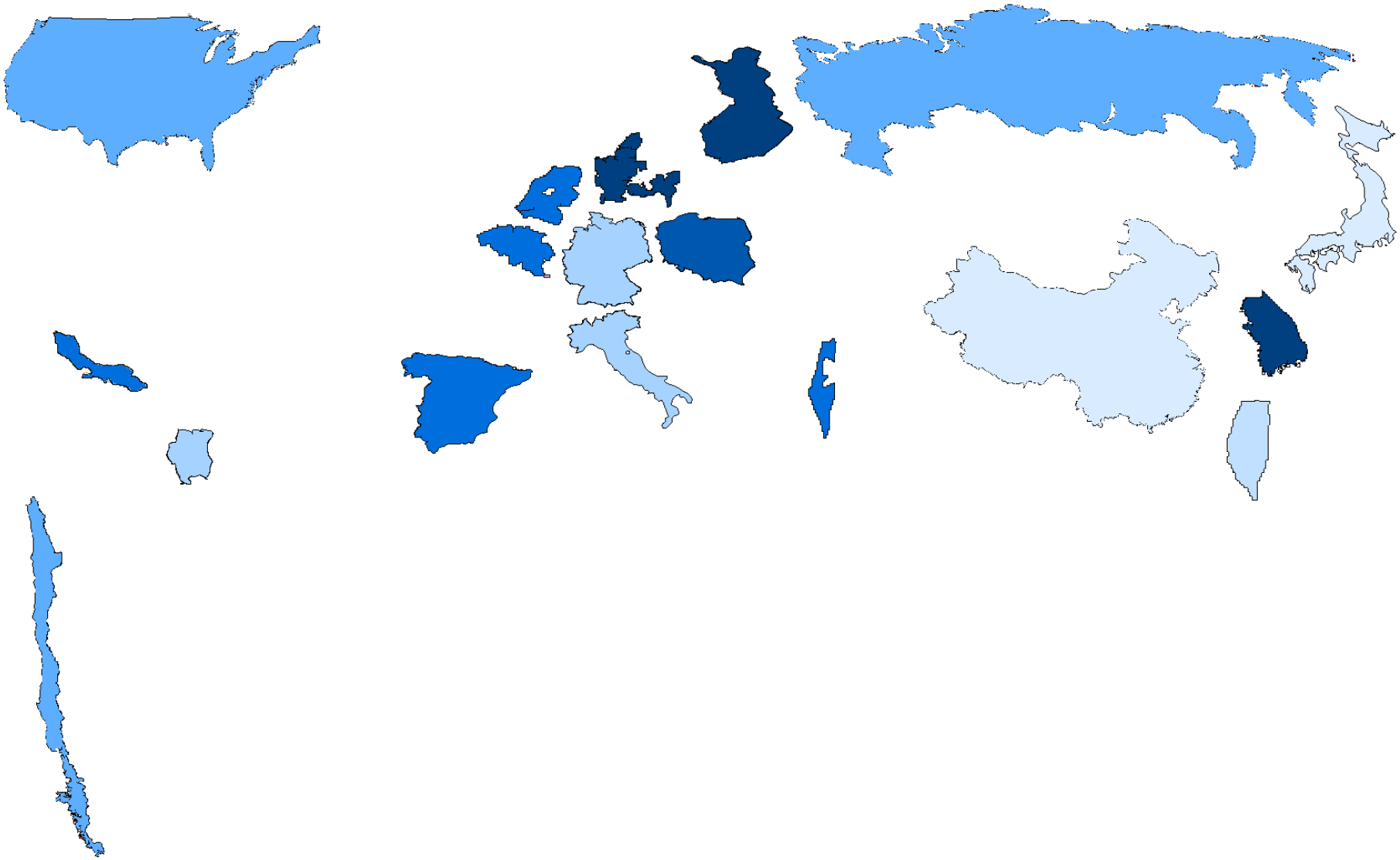
CBQ

Germany .30 (.33)
Curacao .14 (.23)
NL .08 (.13)
U.S.A. .00 (.00)
Finland -.15 (-.06)
Suriname -.16 (-.02)
Taiwan -.25 (-.24)
China -2.14 (-2.24)

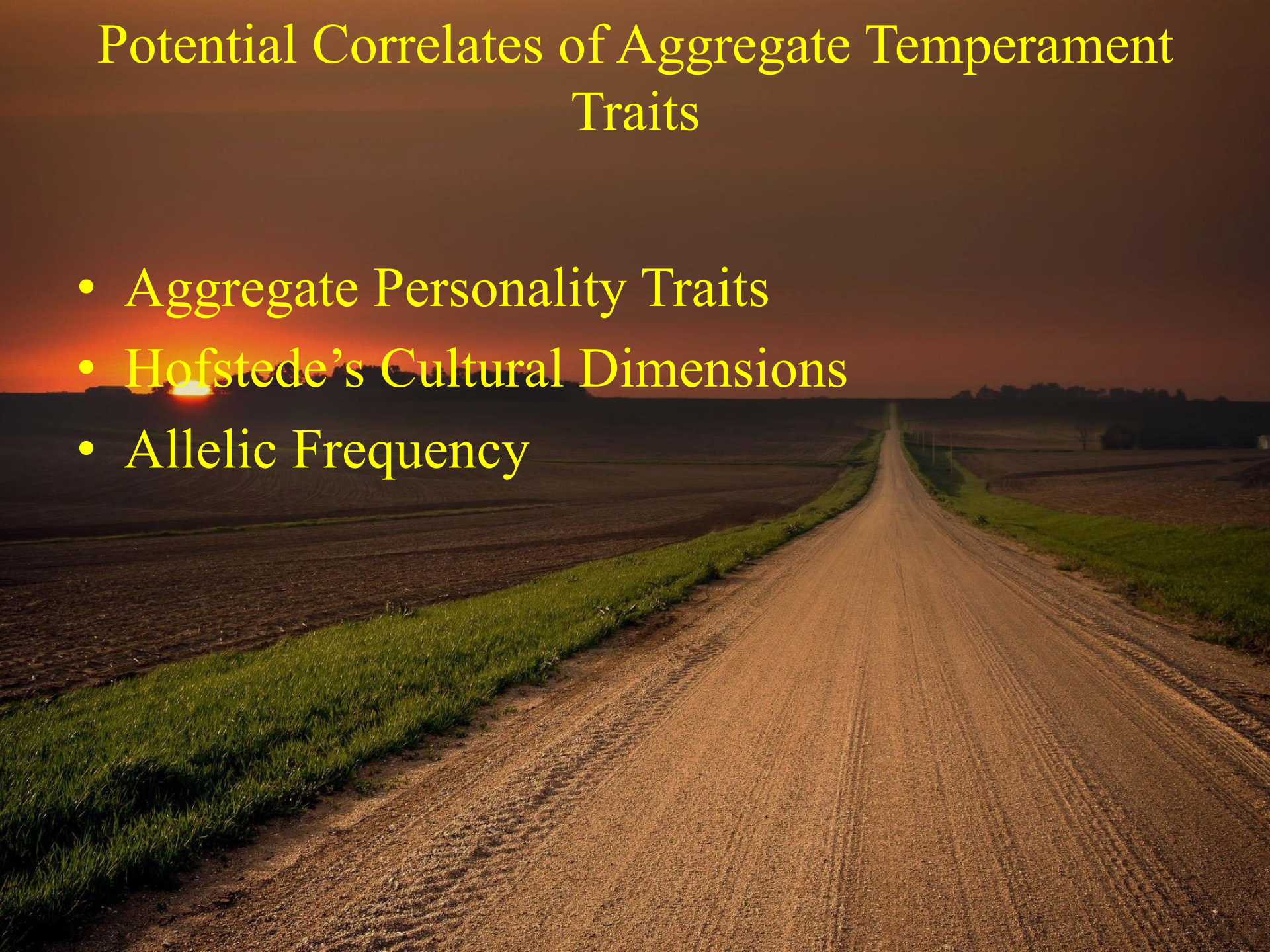
ATQ

Finland .63.(.41)
Belgium m (.11)
Chile m (.04)
U.S.A. .00 (.00)

Regulatory Capacity



Potential Correlates of Aggregate Temperament Traits



- Aggregate Personality Traits
- Hofstede's Cultural Dimensions
- Allelic Frequency

Aggregate Personality Traits

- Mean trait (Big 5) levels of culture members
- Self-ratings (obtained from McCrae, 2001, 2002) and other-ratings (from McCrae et al., 2005)
- Predictions:
  - Countries high on E, O also high on Surgency
  - " N " Negative Affectivity
  - " C, A " Regulatory Capacity

Results: Correlations between Aggregate Personality and Temperament Traits

	E		N		C		O		A	
	Self	Oth	Self	Oth	Self	Oth	Self	Oth	Self	Oth
Surgency	.46 (.65*)	.63* (.60*)	-.25 (-.38)	.51# (.46)	-.23 (-.11)	.26 (.27)	-.40 (-.30)	.29 (.43)	.15 (.24)	.58* (.67*)
Neg. Aff.	-.51# (-.57#)	-.20 (-.34)	.78* (.82*)	.00 (.03)	-.14 (-.12)	.43 (.29)	-.07 (-.01)	-.40 (-.54#)	-.50# (-.49)	-.31 (-.52#)
Reg. Cap.	.41 (.36)	.50# (.53#)	-.34 (-.40)	.28 (.46)	.14 (-.05)	.23 (.26)	.10 (.24)	.32 (.45)	.39 (.45)	.72* (.75*)

Data obtained from McCrae 2001, 2002; McCrae et al., 2005

N = 12

Results: Correlations between Aggregate Personality and Temperament Traits

	E		N		C		O		A	
	Self	Oth	Self	Oth	Self	Oth	Self	Oth	Self	Oth
Surgency	.46 (.65*)	.63* (.60*)	-.25 (-.38)	.51# (.46)	-.23 (-.11)	.26 (.27)	-.40 (-.30)	.29 (.43)	.15 (.24)	.58* (.67*)
Neg. Aff.	-.51# (-.57#)	-.20 (-.34)	.78* (.82*)	.00 (.03)	-.14 (-.12)	.43 (.29)	-.07 (-.01)	-.40 (-.54#)	-.50# (-.49)	-.31 (-.52#)
Reg. Cap.	.41 (.36)	.50# (.53#)	-.34 (-.40)	.28 (.46)	.14 (-.05)	.23 (.26)	.10 (.24)	.32 (.45)	.39 (.45)	.72* (.75*)

Data obtained from McCrae 2001, 2002; McCrae et al., 2005

N = 12

Hofstede's Cultural Dimensions

- Individualism: Emphasis on caring for self and own family
  - Linked to high E, O, A
  - Predicted to be related to high Surgency

- Power distance: Acceptance of inequality in power
  - Linked to low E, low A, low O, high C
  - Predicted to be related to low Surgency

- Masculinity: Society driven by competition, achievement, success
  - Unrelated to aggregate personality in prior studies
  - Males tend to be higher in Surgency, lower in Reg. than females (Else-Quest, 2006)
  - Predicted to be related to high Surgency, low Regulation

- Uncertainty Avoidance: The extent to which society members are threatened by unknown situations
  - Linked to high N, low C, low A
  - Predicted to be related to high Negative Affectivity, low Regulation

- Indulgence: Society allows members to be unrestrained
  - Not studied in relation to personality
  - - Predicted to be related to high Surgency, low Regulation

Results: Correlations between Cultural Dimensions and Temperament Traits

	Individualism	Power Distance	Masculinity	Uncertainty Avoidance	Indulgence
Surgency	.07 (.29)	-.46# (-.65*)	-.29 (-.43#)	.16 (-.05)	.42 (.57*)
Neg. Aff.	-.62* (-.59*)	.44# (.56*)	.42 (.55*)	.54* (.60*)	-.47# (-.60*)
Reg. Cap.	.33 (.45#)	-.47# (-.63*)	-.68* (-.64*)	-.06 (-.02)	.39 (.50#)

Data obtained from http://geert-hofstede.com/countries.html

N = 17

Results: Correlations between Cultural Dimensions and Temperament Traits

	Individualism	Power Distance	Masculinity	Uncertainty Avoidance	Indulgence
Surgency	.07 (.29)	-.46# (-.65*)	-.29 (-.43#)	.16 (-.05)	.42 (.57*)
Neg. Aff.	-.62* (-.59*)	.44# (.56*)	.42 (.55*)	.54* (.60*)	-.47# (-.60*)
Reg. Cap.	.33 (.45#)	-.47# (-.63*)	-.68* (-.64*)	-.06 (-.02)	.39 (.50#)

Data obtained from http://geert-hofstede.com/countries.html

N = 17

Allelic Frequency

5-HTTLPR (Serotonin transporter)

- Short allele carriers express more negative emotion
- Short allele more prevalent in collectivist cultures
- Predicted short allele % to be related to high Negative Affectivity

A118G (μ−opioid receptor)

- G allele associated with sensitivity to rejection
- G allele more prevalent in collectivist cultures
- Predicted G allele % to be related to high Negative Affectivity, low Regulatory Capacity

MAOA (MAOA concentration)

- uVNTR allele associated with high anterior cingulate response to rejection, "sensitivity" to environment
- Predicted uVNTR allele % to be related to high Negative Affectivity, low Regulatory Capacity

5-HTTLPR data obtained from Chiao & Blizinsky, 2009
A118G and MAOA data obtained from Way & Lieberman, 2010

Results: Correlations between Allelic Frequency and Temperament Traits

	5-HTTLPR S-form %	A118G G %	MAOA uVNTR %
Surgency	-.31 (-.48#)	-.13 (-.45)	-.50 (-.68*)
Neg. Aff.	.46 (.45)	.60# (.58)	.55 (.54)
Reg. Cap.	-.54# (-.54#)	-.67* (-.61*)	-.84* (-.82*)

N = 13 for 5-HTTLPR, N = 11 for A118, N = 9 for MAOA

Results: Correlations between Allelic Frequency and Temperament Traits

	5-HTTLPR S-form %	A118G G %	MAOA uVNTR %
Surgency	-.31 (-.48#)	-.13 (-.45)	-.50 (-.68*)
Neg. Aff.	.46 (.45)	.60# (.58)	.55 (.54)
Reg. Cap.	-.54# (-.54#)	-.67* (-.61*)	-.84* (-.82*)

N = 13 for 5-HTTLPR, N = 11 for A118, N = 9 for MAOA

Summary

- Cross-cultural comparisons were consistent with McCrae's personality studies
  - Explicitly for SUR/Extraversion and NA/Neuroticism.
  - Countries high on Agreeableness also high on SUR and REG.
- Cultural Dimensions linked to temperament
  - Several unexpected significant (e.g., NEG and individualism) or null (e.g., SUR and individualism) findings, but several findings consistent with personality work (e.g., NEG and uncertainty avoidance), and no findings counter to predictions
- Allelic frequency in population predicts aggregate temperament traits
  - In countries with high proportion of individuals carrying alleles associated with "sensitivity" to social experiences, low levels of REG and SUR

Limitations and Future Directions

- Representativeness of samples?
- Small number of countries represented
- Collapsing obscures important details
  - Cultural differences in some elements of a factor, but not others
  - Cultural differences at some ages, but not others
- Mediators (ethnotheories, practices, etc.)
- Moderators (e.g., temperament*culture as predictor of adjustment)
- Inferring causal direction in relations between genes-culture-temperament

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