Implications of Identity Resolution in Emerging Adulthood for Intimacy, Generativity, and Integrity Across the Adult Lifespan: Supplemental Material

Contents:

Inventory of Psychosocial Development (Constantinople, 1969)

The Inventory of Psychosocial Development includes ten items for each of Erikson's eight psychosocial stages. This includes five items assessing the positive pole of each stage (i.e., Trust, Autonomy, Initiative, Industry, Identity, Intimacy, Generativity, Ego Integrity) and five items assessing the negative pole of each construct (i.e., Mistrust, Shame and Doubt, Guilt, Inferiority, Diffusion, Isolation, Stagnation, Despair).

The original version of the scale, developed by Constantinople (1969), assessed the first six stages only. Subsequently, Whitbourne and Waterman (1979) items to assess the remaining two stages, Generativity and Ego Integrity.

Participants respond to the items below using the following scale:

7 = definitely most characteristic of you
6 = very characteristic of you
5 = somewhat characteristic of you
4 = neither characteristic nor *un* characteristic of you
3 = somewhat *un* characteristic of you
2 = very *un* characteristic of you
1 = definitely most *un* characteristic of you

Item:		Subscale:
IPD1	Placid and untroubled	Trust
IPD2	An automatic response to all situations	Shame and doubt
IPD3	Adventuresome	Initiative
IPD4	Can't fulfill my ambitions	Inferiority
IPD5	Confidence is brimming over	Identity
IPD6	Little regard for the rest of the world	Isolation
IPD7	Incapable of absorbing frustration and everything frustrates me	Mistrust
IPD8	Value independence above security	Autonomy
IPD9	Sexually blunted	Guilt
IPD10	Conscientious and hardworking	Industry
IPD11	A poseur, all façade and pretense	Diffusion
IPD12	Candid, not afraid to expose myself	Intimacy
IPD13	Accessible to new ideas	Trust
IPD14	Meticulous and over-organized	Shame and doubt
IPD15	Dynamic	Initiative
IPD16	Don't apply myself fully	Inferiority
IPD17	Natural and genuine	Identity
IPD18	Preoccupied with myself	Isolation
IPD19	Can't share anything	Mistrust
IPD20	Free and spontaneous	Autonomy

IPD21	Afraid of impotence	Guilt
IPD22	Interested in learning and like to study	Industry
IPD23	Spread myself thin	Diffusion
IPD24	Warm and friendly	Intimacy
IPD25	Imperturbable optimist	Trust
IPD26	Cautious, hesitant, doubting	Shame and doubt
IPD27	Ambitious	Initiative
IPD28	Fritter away my time	Inferiority
IPD29	Poised	Identity
IPD30	Very lonely	Isolation
IPD31	Pessimistic, little hope	Mistrust
IPD32	Stand on own my own two feet	Autonomy
IPD33	Think too much about the wrong things	Guilt
IPD34	Serious, have high standards	Industry
IPD35	Attempt to appear at ease	Diffusion
IPD36	Have sympathetic concern for others	Intimacy
IPD37	Able to take things as they come	Trust
IPD38	Feel as if i were being followed	Shame and doubt
IPD39	Inventive, delight in finding new solutions to new problems	Initiative
IPD40	Ineffective, don't amount to much	Inferiority
IPD41	Know who I am and what I want out of life	Identity
IPD42	Cold and remote	Isolation
IPD43	Dim nostalgia for lost paradise	Mistrust
IPD44	Quietly go my own way	Autonomy
IPD45	Big smoke but no fire	Guilt
IPD46	Accomplish much, truly productive	Industry
IPD47	Never know how I feel	Diffusion
IPD48	Tactful in personal relations	Intimacy
IPD49	Deep, unshakable faith in myself	Trust
IPD50	Always in the wrong, apologetic	Shame and doubt
IPD51	Sexually aware	Initiative
IPD52	A playboy, always "hacking around"	Inferiority
IPD53	Pride in my own character and values	Identity
IPD54	Secretly oblivious to the opinions of others	Isolation
IPD55	Never get what I really want	Mistrust
IPD56	Good judge of when to comply and when to assert myself	Autonomy
IPD57	Inhibited and self-restricted	Guilt
IPD58	Excel in my work	Industry
IPD59	Afraid of commitment	Diffusion
IPD60	Comfortable in intimate relationships	Intimacy

IPD61	Want to be remembered	Generativity
IPD62	Think about my failures	Despair
IPD63	Concerned about my health	Stagnation
IPD64	Reached my goals	Ego integrity
IPD65	Like to care for others	Generativity
IPD66	Afraid of getting old	Despair
IPD67	Enjoy spending time by myself	Stagnation
IPD68	Proud of what I've done	Ego integrity
IPD69	Feel productive in my work	Generativity
IPD70	Regret the mistakes I've made	Despair
IPD71	Bored by work	Stagnation
IPD72	Satisfied with my life so far	Ego integrity
IPD73	Creative	Generativity
IPD74	Don't have enough time to do what I want to	Despair
IPD75	Have little interest in family affairs	Stagnation
IPD76	Take responsibility for my actions	Ego integrity
IPD77	Enjoy making plans for the future	Generativity
IPD78	Wish I could change myself	Despair
IPD79	More concerned about myself than about others	Stagnation
IPD80	Wouldn't change my life if I lived it over	Ego integrity

Supplemental Figure S1. *Matrix Interpretation of Erikson's Model*

	Outcome							
	Trust	Autonomy	Initiative	Industry	Identity	Intimacy	Generativity	Integrity
Trust	■	▓	░	░	░	░	░	░
Autonomy		■	▓	░	░	░	░	░
Initiative			■	▓	░	░	░	░
Industry				■	▓	░	░	░
Identity					■	▓ *	░ *	░ *
Intimacy						■	▓	░
Generativity							■	▓
Integrity								■

Predictor (vertical label on left axis)

Note. Supplemental Figure 1 depicts the 56 possible pathways linking eight psychosocial constructs represented within the matrix interpretation of Erikson's model. Assuming that each construct can only inform the constructs in subsequent stages (e.g., autonomy does not precede trust) reduces the number of possible paths to 28, depicted by the gray cells. The dark gray cells depict the links from one stage to the subsequent stage. The cells with an asterisk represent the links addressed by the primary research questions and hypotheses of the present study.

Supplemental Table S1. *Correlations between Psychosocial Constructs and Completion at Each Wave*

	Completed T2	Completed T3	Completed T4	Completed T5
T1 Identity	.02	.05	.00	.03
T1 Intimacy	.03	.06*	.01	-.02
T2 Intimacy	-	.09	.02	-.03
T3 Intimacy	-.07	-	-.04	-.13*
T4 Intimacy	-.02	.03	-	-.09
T5 Intimacy	.02	.01	.10	-
T1 Generativity	.05	.05	.06	-
T2 Generativity	-	.08	.09	.03
T3 Generativity	.05	-	.10	.03
T4 Generativity	.03	.11	-	.02
T5 Generativity	.03	.06	.11	-
T1 Integrity	-.05	.05	.13***	-
T2 Integrity	-	.13**	.13**	.17***
T3 Integrity	-.01	-	.04	.01
T4 Integrity	-.02	.04	-	-.02
T5 Integrity	.06	.10	-.01	-

Note. ***$p < .001$; **$p < .01$; *$p < .05$. No correlation could be calculated for the association between T1 Generativity and Completed T5, or between T1 Integrity and Completed T5, because participants in Cohort 1 did not receive the Generativity and Integrity subscales at T1, and this is the only cohort to have reached T5 at present.

Supplemental Table S2. *Cronbach's Alpha for IPD Subscales*

	Identity	Intimacy	Generativity	Generativity*	Integrity
Cohort 1, T3	-	.72	.57	.61	.77
Cohort 1, T4	-	.76	.55	.62	.78
Cohort 1, T5	-	.75	.61	.66	.78
Cohort 2, T2	-	.76	.39	.59	.77
Cohort 2, T3	-	.76	.57	.69	.72
Cohort 2, T4	-	.73	.50	.56	.76
Cohort 3, T1	.64	.74	.36	.55	.69
Cohort 3, T2	-	.67	.47	.55	.76
Cohort 3, T3	-	.72	.54	.65	.69
Cohort 4, T1	.64	.72	.45	.61	.74
Cohort 4, T2	-	.66	.56	.62	.77

Note. *Alternative coding for Generativity, removing item 63 ("enjoy spending time by myself") and 67 ("concerned about my health")

Supplemental Table S3. *Test-Retest Reliability for Intimacy*

	1	2	3	4	5
Cohort 1					
1. T1 Intimacy	-				
2. T2 Intimacy	.47***	-			
3. T3 Intimacy	.52***	.65***	-		
4. T4 Intimacy	.45***	.59***	.72***	-	
5. T5 Intimacy	.41***	.50***	.66***	.64***	-
Cohort 2					
1. T1 Intimacy	-				
2. T2 Intimacy	.63***	-			
3. T3 Intimacy	.24*	.69***	-		
4. T4 Intimacy	.39***	.75***	.78***	-	
Cohort 3					
1. T1 Intimacy	-				
2. T2 Intimacy	.41***	-			
3. T3 Intimacy	.39***	.62***	-		
Cohort 4					
1. T1 Intimacy	-				
2. T2 Intimacy	.45***	-			

Note. ***$p<.001$, **$p<.01$, *$p<.05$

Supplemental Table S4. *Test-Retest Reliability for Generativity*

	1	2	3	4	5
Cohort 1					
1. T1 Generativity	-				
2. T2 Generativity	-	-			
3. T3 Generativity	-	.53***	-		
4. T4 Generativity	-	.56***	.55***	-	
5. T5 Generativity	-	.42***	.54***	.71***	-
Cohort 2					
1. T1 Generativity	-				
2. T2 Generativity	.48***	-			
3. T3 Generativity	.40***	.59***	-		
4. T4 Generativity	.28**	.59***	.65***	-	
Cohort 3					
1. T1 Generativity	-				
2. T2 Generativity	.50***	-			
3. T3 Generativity	.46***	.40**	-		
Cohort 4					
1. T1 Generativity	-				
2. T2 Generativity	.46***	-			

Note. Generativity was not assessed at T1 for Cohort 1. ***$p<.001$, **$p<.01$

Supplemental Table S5. *Test-Retest Reliability for Integrity*

	1	2	3	4	5
Cohort 1					
1. T1 Integrity	-				
2. T2 Integrity	-	-			
3. T3 Integrity	-	.64***	-		
4. T4 Integrity	-	.65***	.73***	-	
5. T5 Integrity	-	.56***	.70***	.81***	-
Cohort 2					
1. T1 Integrity	-				
2. T2 Integrity	.38***	-			
3. T3 Integrity	.35**	.45*	-		
4. T4 Integrity	.37***	.51***	.56***	-	
Cohort 3					
1. T1 Integrity	-				
2. T2 Integrity	.51***	-			
3. T3 Integrity	.45***	.64***	-		
Cohort 4					
1. T1 Integrity	-				
2. T2 Integrity	.47***	-			

Note. Integrity was not assessed at T1 for Cohort 1. ***$p<.001$, **$p<.01$, *$p<.05$

Supplemental Table S6. *Latent Growth Curve Model Predicting Generativity on Identity, with Alternative Generativity Scoring*

	Generativity	
	Coefficient	SE
Fixed Effects		
For intercept		
Intercept	12.56***	.99
Identity	.43***	.04
Cohort	-.51	.29
Female	2.52***	.46
For linear slope		
Intercept	.11	.37
Identity	-.05*	.02
Cohort	.36*	.15
Female	-.28	.24
Random Effects		
Intercept	12.23***	2.23
Slope	1.74**	.53

Note. All coefficients are unstandardized. ***$p < .001$; **$p < .01$; *$p < .05$.

Supplemental Table S7. *Latent Growth Curve Models Predicting Psychosocial Outcomes, Including Graduate Education as a Covariate*

	Intimacy		Generativity	
	Coefficient	SE	Coefficient	SE
Fixed Effects				
For intercept				
Intercept	7.80***	1.25	7.41***	1.38
Identity	.50***	.05	.28***	.05
Cohort	1.95*	.83	.06	.77
Female	1.98**	.70	1.27	.71
Graduate education	.47	.70	.58	.80
For linear slope				
Intercept	1.26**	.47	.04	.52
Identity	-.07***	.02	.01	.02
Cohort	-.24	.32	.15	.32
Female	.38	.26	.10	.28
Graduate education	.23	.26	.16	.31
Random Effects				
Intercept	18.90***	3.42	14.05***	3.54
Slope	1.25*	.51	1.32*	.52

Note. All coefficients are unstandardized. ***$p < .001$; **$p < .01$; *$p < .05$.

These exploratory analyses examine whether attaining a graduate degree is associated with increases in intimacy or generativity across adulthood. Only Cohorts 1 and 2 had educational data available, so these analyses only include participants in those cohorts who were not missing on all education status indicators ($N = 306$). Attempts to fit a model for integrity were unsuccessful, perhaps because of the smaller sample size and greater complexity in the functional form for integrity (a basis model, rather than the simpler linear functional form for intimacy and generativity). Attaining a graduate degree does not appear to be significantly associated with trajectories for intimacy or generativity.

Supplemental Table S8. *Latent Growth Curve Models Excluding Participants with Ages Outside Intended Range*

	Intimacy		Generativity		Integrity	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Fixed Effects						
For intercept						
Intercept	10.48***	.44	7.49***	.53	-	-
EA Identity	.56***	.03	.34***	.02	-	-
Cohort	.12	.15	-.23	.17	-	-
Female	1.63***	.35	1.26***	.32	-	-
For linear slope						
Intercept	1.07***	.25	.28	.25	-	-
EA Identity	-.11***	.02	-.03*	.01	-	-
Cohort	.14	.13	.16	.12	-	-
Female	.13	.19	.08	.18	-	-
For basis intercept						
Intercept	-	-	-	-	4.57***	1.00
EA Identity	-	-	-	-	.63***	.05
Cohort	-	-	-	-	-.60*	.30
Female	-	-	-	-	1.23**	.45
For basis shape factor						
Intercept	-	-	-	-	5.22*	2.62
EA Identity	-	-	-	-	-.40**	.12
Cohort	-	-	-	-	-1.15	.68
Female	-	-	-	-	-.44	1.15
Basis factor loadings						
Wave 2	-	-	-	-	.50***	.09
Wave 3	-	-	-	-	.39	.25
Wave 4	-	-	-	-	.57***	.13
Random Effects						
Intercept	15.98***	2.50	11.95***	2.21	-	-
Slope	1.20*	.50	1.69**	.52	-	-
Basis intercept	-	-	-	-	23.09	16.52
Basis slope	-	-	-	-	64.93	60.63

Note. All coefficients are unstandardized. ***$p < .001$; **$p < .01$; *$p < .05$. EA = Emerging adulthood. Fixed effects represent the average trajectory across all participants, and random effects represent the variance of individual participants' trajectories around the average trajectory.

These models are identical to the main models reported in the manuscript, but exclude two participants whose ages were reported as 55 and 58 within Wave 3, when participants were supposed to be in their forties. Results are largely unchanged.

Supplemental Table S9. *Latent Growth Curve Models Controlling for Mean-Imputed Age*

	Intimacy		Generativity		Integrity	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Fixed Effects						
For intercept						
Intercept	10.48***	.44	7.63***	.54	-	-
EA Identity	.56***	.03	.34***	.02	-	-
Cohort	.13	.15	-.27	.17	-	-
Female	1.63***	.35	1.27***	.32	-	-
For linear slope						
Intercept	1.16***	.25	.27	.25	-	-
EA Identity	-.11***	.02	-.03*	.01	-	-
Cohort	.07	.14	.16	.12	-	-
Female	.12	.19	.05	.18	-	-
For basis intercept						
Intercept	-	-	-	-	5.10***	1.31
EA Identity	-	-	-	-	.64***	.04
Cohort	-	-	-	-	-.76*	.39
Female	-	-	-	-	1.21**	.47
For basis shape factor						
Intercept	-	-	-	-	4.17	2.90
EA Identity	-	-	-	-	-.42***	.08
Cohort	-	-	-	-	-.97	.82
Female	-	-	-	-	-.41	1.07
Basis factor loadings						
Wave 2	-	-	-	-	.54***	.10
Wave 3	-	-	-	-	.49*	.21
Wave 4	-	-	-	-	.66***	.10
Random Effects						
Intercept	16.14***	2.49	11.95***	2.18	-	-
Slope	1.23*	.49	1.71**	.51	-	-
Basis intercept	-	-	-	-	34.32	32.39
Basis slope	-	-	-	-	96.88	80.05

Note. All coefficients are unstandardized. ***$p < .001$; **$p < .01$; *$p < .05$. EA = Emerging adulthood. Fixed effects represent the average trajectory across all participants, and random effects represent the variance of individual participants' trajectories around the average trajectory.

These models control for age as a time-varying covariate. The two participants whose ages were outside the intended W3 age range are excluded. Because cases that are missing data on predictors are listwise deleted in the process of fitting a latent growth curve model, we needed a strategy for handling instances where participants were missing age data in one or more waves. This table reports the findings for our first approach: replacing missing age values with the mean age for that wave. Results are largely unchanged from the main findings reported in the manuscript.

Supplemental Table S10. *Latent Growth Curve Models Controlling for Age, with Missing Ages Computed*

	Intimacy		Generativity		Integrity	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Fixed Effects						
For intercept						
Intercept	10.36***	.49	7.77***	.60	-	-
EA Identity	.54***	.03	.34***	.03	-	-
Cohort	.22	.19	-.35	.21	-	-
Female	1.60***	.38	1.24***	.35	-	-
For linear slope						
Intercept	1.11***	.27	.15	.27	-	-
EA Identity	-.10***	.02	-.03*	.01	-	-
Cohort	.07	.17	.21	.14	-	-
Female	.14	.20	.05	.19	-	-
For basis intercept						
Intercept	-	-	-	-	5.89	21.78
EA Identity	-	-	-	-	.62*	.31
Cohort	-	-	-	-	-1.08	7.08
Female	-	-	-	-	1.13	2.40
For basis shape factor						
Intercept	-	-	-	-	2.82	42.44
EA Identity	-	-	-	-	-.39*	.17
Cohort	-	-	-	-	-.57	12.27
Female	-	-	-	-	-.16	5.57
Basis factor loadings						
Wave 2	-	-	-	-	.57	1.90
Wave 3	-	-	-	-	.56	2.88
Wave 4	-	-	-	-	.66	1.38
Random Effects						
Intercept	16.08***	2.62	11.01***	2.32	-	-
Slope	1.23*	.50	1.64**	.51	-	-
Basis intercept	-	-	-	-	47.43	785.69
Basis slope	-	-	-	-	127.39	1557.56

Note. All coefficients are unstandardized. ***$p < .001$; **$p < .01$; *$p < .05$. EA = Emerging adulthood. Fixed effects represent the average trajectory across all participants, and random effects represent the variance of individual participants' trajectories around the average trajectory.

These models control for age as a time-varying covariate. The two participants whose ages were outside the intended W3 age range are excluded. Because cases that are missing data on predictors are listwise deleted in the process of fitting a latent growth curve model, we needed a strategy for handling instances where participants were missing age data in one or more waves. This table reports the findings for our second approach: replacing missing age values with an estimate based on participants' ages reported in previous or subsequent waves, and calculated using the approximate time in years between waves. Results are largely unchanged from the main findings reported in the manuscript, except for the findings for integrity: cohort is no longer significantly associated with baseline integrity.

Comparison to Sneed et al. (2012)

Our findings on the relationship between identity and intimacy may seem inconsistent with those of Sneed et al. (2012). Using cross-lagged panel modeling, Sneed et al. found few instances across four waves where one assessment of identity predicted a change in intimacy for the subsequent wave. We found that baseline identity predicted change in intimacy over time, and argue that emerging adulthood identity does indeed predict subsequent levels of intimacy, which may seem to contradict Sneed et al.'s conclusion that identity does not predict future intimacy. Importantly, however, Sneed et al. (2012) controlled for the stability in identity and intimacy over time in their models – they tested whether change in identity from, for instance, T1 to T2, would predict change in intimacy from T1 to T2, not whether the initial level of identity would predict subsequent change in intimacy. In contrast, our study is explicitly interested in whether the initial level of identity (including any stable component of identity) predicts long-term change in intimacy, which may be subtle from wave to wave, but may add up to a significant effect over the course of several decades, as we found. It is possible that the stable portion of identity predicts trajectories of intimacy over time, even if wave-to-wave fluctuations in identity do not predict wave-to-wave fluctuations in intimacy over time for most waves. Taken together, the findings of both studies suggest that individuals with lower identity resolution increase in their level of intimacy over time, but it may not be change in identity resolution itself that is driving the change in intimacy.