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HUMAN DEVELOPMENT, BIRTH TO DEATH

Moffitt & Caspi
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Concept Paper Form

Provisional Paper Title: Life-course persistent antisocial behaviors and accelerated aging in a longitudinal birth cohort
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Today's Date: 5/27/2021

Please describe your proposal in 2-3 pages with sufficient detail for helpful review.

Objective of the study:

Individuals exhibiting conduct problems are generally in poorer health by midlife than their peers.[1,2] They more frequently visit the emergency department and are at higher risk of developing a wide-range of chronic diseases including heart, liver and gastrointestinal diseases.[3,4,5] One hypothesized mechanism for this decrease in healthspan is that conduct problems may be associated with faster biological aging. Wertz et al. (2021) reported that individuals with a history of psychopathology, including externalizing disorders such as conduct disorder, have a faster pace of aging as indicated by measures of decline in sensory, motor and cognitive functioning by midlife.[6] However, individuals exhibiting conduct problems are not a homogeneous group. One widely replicated taxonomy of conduct problems has been proposed by Moffitt (1993), which identifies the 'life-course persistent' offenders, characterized by an early onset of conduct problems which persist into adulthood, the 'adolescence-limited' offenders, characterized by conduct problems mostly limited to adolescence, and the 'no/low conduct problems' group, which does not exhibit conduct problems.[3,7] A fourth group of individuals has since been added, the 'childhood-limited' group, which are characterized by childhood-limited conduct problems.

To date, it remains unclear whether individuals following increasingly more persistent conduct problem trajectories (i.e., no/low problems, childhood-limited, adolescence-limited, life-course persistent conduct problems) are at increased risk of accelerated aging. Thus, the aim of this study is thus to investigate the pace of aging among individuals according to Moffitt's developmental taxonomy.[3,7]

Data analysis methods:

Regression analyses will be conducted to test the association between the no/low conduct problems, the childhood-limited, the adolescence-limited, and the life-course persistent conduct problems

groups[3, 7] and each aging outcome,[6] adjusted for the study members' sex. In line with previous investigations of aging in the Dunedin cohort,[6,9] three sets of aging outcomes assessed using both self-reports and laboratory tests will be used: 1) a cross-phase measure of biological pace of aging and chronological age (i.e., number of years since birth); 2) sensory and motor function; and 3) cognitive function.

As accelerated aging was shown to be associated with pre-existing health problems preceding the onset of conduct disorder, our analyses will control for childhood equivalent measures of each mid-age health outcome, which were collected prospectively when the study members were younger. We will also include covariates associated with both conduct problems and accelerated aging, namely socioeconomic status, childhood maltreatment and low self-control.[6,8,10] Moreover, to test whether the association between conduct problems and health outcomes in midlife is not attributable to smoking, we will include smoking as a potential confounder.[6]

Variables needed at which ages:

Phase	Variable label	Variable description
Cross-phase		
	Snum	
	Sex	
	zChildPoorHlth	Childhood poor health z-score
	ZMotor39	Motor score ages 3-9
	Zbalance39	Childhood balance (age 3 to 9)
	Zacuity711	Childhood visual acuity (age 7 to 11)
	SESAV115 & sescuts	Childhood socioeconomic backgroud
	INSLt5X & INSLT5XC	Number of 5 maltreatment insults & divided into 3 categories
	TAX_CLASS	Antisocial conduct problems trajectory (low, AL, LCP) Odgers' LCP Developmental Taxonmy Class (Odgers et al., 2007).
Age 7		
	PTAcode_rt7	Pure tone code, continous, right ear at 7
	PTAcode_lt7	Pure tone code, continous, left ear at 7
Age 9		
	PTAcode_rt9	Pure tone code, continous, right ear at 9
	PTAcode_lt9	Pure tone code, continous, left ear at 9
Age 11		
	spin11_nn SPIN11	no noise, mean of 2 trials
	spin11_10db SPIN11	10db, mean of 2 trials
	spin11_5db SPIN11	5db, mean of 2 trials
	PTAave_rt11	PureTone ave of .5, 1K, 2K & 4K, right ear, age 11
	PTAave_lt11	PureTone ave of .5, 1K, 2K & 4K, left ear, age 11
	spin11_nn	SPIN11 no noise, mean of 2 trials
Age 45		
	Disease45	heartAttckLifT45 Cancer45 diabetes 45 ==1
	srAgePercp45	Self-perceived age in years
	SRHearing45	Hearing difficulty screen

	lisnslcsrtscp45	LiSNS_LowCueSRT_Score [low is good] - P45
	lisnshcsrtscp45	LiSNS_HighCueSRT_Score [low is good] - P45
	lisnstkadvscp45	LiSNS_TalkerAdvantage_Score [low is poor] - P45
	lisnsspadvscp45	LiSNS_SpatialAdvantage_Score [low is poor] - P45
	lisntotadvscp45	LiSNS_TotalAdvantage_Score [low is poor] - P45
	SRvision45 SR	SR vision difficulty screen, high = much difficulty
	VisAcuBest45	Visual acuity 45, best of either eye, LOW is GOOD
	ContrastSens45	Contrast sensitivity score, p45
	Velocity_avg45	Velocity: Avg of walk/cog/max, p45, cm/second
	PhyLimts45	SF36 physical limitations (RAND version), p45
	Dizzy45	Dizziness scale, high = freq dizzy triggers - hlh scale
	balClsMax45	One-legged balance, Eyes closed, max of three trials
	fsIQ45_STD	Full Scale IQ at 45, standardized to Mean 100, SD 15
	CogDiffSc45expd	Expanded Cog complaints scl at 45
	PaceOfAging	Pace of Aging (Age 45)

Significance of the Study (for theory, research methods or clinical practice):

Older persons are a growing demographic group in all societies worldwide. Indeed, people are living longer and mostly healthier lives. However, there is an unequal distribution of increased healthspan, whereby some groups have a shorter healthspan and are at higher risk of developing chronic diseases. Previous studies have suggested that older offenders, who are a growing demographic subgroup, are at higher risk of developing a wide-range of chronic diseases including heart, liver and gastrointestinal diseases.[3,4,5] Building on previous research,[6,10] this study proposes to bridge a gap between studies of conduct disorder and geroscience by investigating whether individuals following different conduct problems trajectories (no/low problems, childhood-limited, adolescence-limited, life-course persistent conduct problems) are at greater risk of accelerated aging. A better understanding of the driving factors behind variability in the pace of aging among offenders has implications for public health planning and intervention. For the purpose of optimizing resource utilization, offenders at higher risk of accelerated aging could be targeted with interventions. Indeed, with growing costs in healthcare services, increasing the efficiency of healthcare spending represents a top priority.[11]

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