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Individual Development and Adaptation (IDA): A Life-Span Longitudinal Program Suited for Person-Oriented Research

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Abstract: In this article, we give a presentation of the longitudinal research program Individual Development and Adaptation (IDA) that can be helpful as a template for researchers considering to launch their own longitudinal studies, and that opens the door to IDA for researchers looking for suitable data to be analyzed within their own project or in collaboration with IDA. We also introduce the holistic-interactionistic theoretical framework of IDA and the associated person-oriented approach – an approach that is especially suited for analyzing the rich IDA data set with its broad coverage of different areas of adjustment and related factors. The paper provides an overview of the essential features of the IDA database, as well as of ongoing and planned IDA research.

Keywords: IDA, longitudinal, prospective, person-oriented, development, adaptation

The study of individual development is an important field of research in Psychology. Within this field, a person-oriented approach is being increasingly recognized as a viable alternative to a standard variable-oriented approach. The variable-oriented approach is characterized by variables as the main conceptual and analytical units and by statistical parameters describing group development rather than individual development. This is in contrast to a person-oriented approach where the broad theoretical framework is holistic-interactionistic and processes are regarded as partly specific for the individual, with individuals functioning as whole organisms that need to be conceptualized as such. In contexts where the person-oriented approach is appropriate, the statistical methods used should be tailored to this purpose. This implies that patterns of variables, rather than variables considered in isolation, should constitute the basic conceptual and analytical units, and that the findings should be interpretable at the level of the single individual (see Bergman & Lundh, 2015, for a short overview of literature presenting the person-oriented approach).

When reviewing large longitudinal data bases and the research based on them, it is apparent that they normally are firmly rooted in a variable-oriented approach, and that the scope of the variables included in a data base rarely cover more than a few areas relevant to individual development in a broad sense. In fact, to our knowledge, few large longitudinal programs cover more than a few areas of human development, and few programs include follow-ups of the participants during the major part of the life-span. In addition, longitudinal studies usually do not apply a person-oriented approach. An exception is the life-span longitudinal program *Individual Development and Adaptation* (IDA, described in more detail in later sections). The starting point for IDA was a holistic-interactionistic theoretical framework, which has influenced data collections as well as theory refinement and methodological development within the program.

The purpose of this paper is to give a presentation of IDA that can be helpful as a template for researchers considering to launch their own longitudinal studies, and that opens the door to IDA for researchers looking for suitable data to be analyzed within their own project or in collaboration with

other researchers already working with IDA. Special attention is given to providing information about IDA for researchers planning studies using a person-oriented approach.

History, Theoretical Framework and Methodological Development

Professor David Magnusson at the Department of Psychology, Stockholm University, began planning the IDA program in 1963 and the first data collection took place in 1965. Magnusson, with a background as an experienced elementary school teacher, was already at that time a leading researcher in the field of interactionism. As its name suggests, the aim of the IDA program was to contribute to the understanding of children's psychosocial development and adaptation, and the factors and settings involved in shaping this development. Magnusson realized early that the study of individual development and adaptation is only possible using a longitudinal approach. Even though his holistic-interactionistic theoretical framework was not fully developed at this initial stage, he had formulated a number of principles that should guide data collections and research when studying children's development. These included a view of the child as a whole person, developing in interaction with the environment; the importance of person-situation interactions; the need to take individual differences in developmental tempo into account (e.g., differential biological maturation); and that a child is embedded in multiple contexts at different levels (e.g., peers, parents, school, and the surrounding society) implying that key contextual factors must also be measured. Magnusson's theoretical work evolved over time, and it was presented in a more mature form in his 1988 book about IDA (Magnusson, 1988) as well as in a large number of other publications; for instance, see Magnusson and Törestad (1993) and Magnusson (1999, 2001).

Magnusson led IDA until 1996, when Professor Lars R. Bergman replaced him as the principal investigator. In 2012, the leadership of IDA was transferred to Professors Henrik Andershed and Anna-Karin Andershed at Örebro University. In this way, IDA "came home", as the studied cohorts originate from Örebro.

From the beginning of the 1980's, a methodological program has been carried out within the IDA-program that has largely been focused on developing the person-oriented approach. The holistic-interactionistic theoretical framework has guided this development and in a more modern form the person-oriented approach was presented in Bergman and Magnusson (1997). Although much of the IDA research has used standard variable-oriented methods, which is indeed possible with the data collected in IDA, the need grew to use methods more aligned to the person-oriented theoretical framework, and new such methods had to be developed. This methodological program has often been concerned with elaborations of the person-oriented research paradigm and with classification-based methods for statistically carrying out a person-oriented approach (e.g. Bergman & Andersson, 2010; Bergman, Magnusson, & El-Khouri, 2003; Bergman, Nurmi, & von Eye, 2012; Bergman, Vargha, & Kövi, 2017). A statistical package for conducting such analyses (SLEIPNER, see Bergman et al, 2003), was developed within the IDA program for which Bassam El-Khouri wrote the program code. Moreover, recently András Vargha in Hungary developed a user-friendly statistical package for person-oriented analysis (ROPstat, Vargha, Torma, & Bergman, 2015). This was done in collaboration with IDA.

During its 50 year course, IDA has been successful in securing the uninterrupted funding of research and data collections necessary to keep a large longitudinal study going and being productive. Originally, the program was supported as a school project by the Swedish Board of Education, and when the participants had reached adult age by a number of other funding agencies, including the Bank of Sweden Tercentenary Foundation and the Swedish Social Research Council. Important for the long-term growth, even the survival, of IDA as an active research program, was funding of the large and very expensive data collections in midlife. They were supported by a special funding agency within the Swedish Social Research Council with the task of supporting the infrastructure of large longitudinal studies.

Throughout the years, great efforts have been made to inform the participants, parents, teachers, and media about the IDA program. The parents and teachers have also been involved in evaluation and development of questionnaires, as have the participants once they reached adulthood. This policy, motivated on ethical grounds, is also believed to have contributed to the high participation rates in IDA, and to an absence of the heavy media attacks that in the mid 1980's affected some other Swedish longitudinal programs.

Design of IDA and Overview of Data Collections

IDA was originally designed as a longitudinal cohort sequential study of Swedish school children with the aim to study their development from early school age up to early adulthood. The first data collection took place in 1965 and included three Swedish school grade cohorts. The target populations were all school children in the Swedish town of Örebro who in 1965 attended Grade 3 (born 1955, aged 10, n=1,025), Grade 6 (born 1952, aged 13, n=960), and Grade 8 (born 1950, age 15, n=1,330); see Magnusson, Dunér and Zetterblom (1975).

The cohort of children born in 1955 is called the *Main Group*, and the cohort born in 1952 is called the *Pilot Group*. Both groups have been followed from childhood to early adulthood, the Main Group from age 10 (1965) and the Pilot Group from age 13 (1965). The Main Group has also been followed into midlife with further data collections being planned. The cohort born in 1950 (often referred to as

the pre-pilot group) was studied only once when the children were in Grade 8 (1965). The follow-up data collections for the Main Group and the Pilot Group in Grades 6 and 9 included almost identical variables. The description of IDA in this paper will only concern the main part of the program, namely the data collections, variables, and research based on data for the Main Group. Table 1 gives an overview of the data collections for the Main Group.

The holistic-interactionistic framework that guided IDA has often resulted in very comprehensive data collections that have covered not only a large number of areas relating to biosocial functioning and school adaptation but also numerous contextual factors such as peer networks, parental affiliations to the surrounding community, and school characteristics. In adulthood, numerous health-related factors have also been studied. An overview of the variables included in IDA is given in Table 1.

The total number of variables in the IDA database exceeds 10,000 stemming from more than 20 data collections Therefore, it is only possible to overview the main variable areas for which data were collected in the major data collections. The mandatory school data collections (Grade 3-9) are described by Magnusson et al. (1975), and the first data collection in high school by Beckne (1995). In the high school data collections (ages 17-19), the targeted cohorts are selective because that stage of school was voluntary. Therefore, these data will not be presented. The data collections at adult age are described in different reports within the program (e.g., Andersson, 1983; Andersson et al., 1989; Backenroth et al., 1983; Bergman, 2000; Lindfors, 2004, 2005; Trost & Bergman, 2004; Wångby, 2004). There are numerous technical reports in Swedish that also cover the minor data collections (available on the IDA program website; www.oru.se/theidaprogram).

Characteristics of the Studied Cohorts

The Main Group included all children in the studied school grade cohorts (Grade 3 in 1965, Grade 6 in 1968, Grade 8 in 1970, and Grade 9 in 1971) in the regular school system in Örebro. However, it excluded children in special schools, mostly those for the mentally challenged or for those with severe impairments like blindness (approx. 2-4% of all children). The Örebro schools also included a minor proportion of children from the surrounding more rural areas. Children born 1955 who entered the Örebro school system after the age of 10 were also included in the data collections. In this way, the Main Group cohort grew, and after the Grade 9 data collection it consisted of n=1,393 children. This *Extended cohort* was then followed up in most of the subsequent data collections at adult age. In short, the participants in the Main Group have thus far been followed from age 10 to age 49.

The main data collections before adult age were carried out in Grades, 3, 6, 8, and 9. In Table 1, the number of children attending a school grade cohort is presented, as well as the participation rates, showing that the participation rates were high (usually above 90%). Data from official records were also collected, covering both childhood and early adult age. The main data collections at adult age, seven so far, are also described in Table 1. Again, participation rates were high in these later data collections.

At midlife, age 43, women who participated in the personal interview (defined as having midlife data about social background and vocational career, n = 569, participation rate=89%) were compared to those who did not participate on four school age variables: IQ, School achievement, Parents' education, and Parents' income. In two variables, significant mean differences existed between the two groups. School achievement and IQ were slightly higher for those who participated in the follow-up in midlife than for those who did not participate (effect sizes of 0.23 and 0.29, respectively; Bergman, Corovic, Ferrer Wreder, & Modig, 2014). A parallel analysis was performed for the males who participated in the personal interview at age 47-48 (n = 393, participation rate = 76%) using four school age variables: Aggressiveness, Total School Grade, Total IQ and Educational Level of the Parents. In two of the four variables, significant mean differences existed between the two groups. Total School Grade and Total IQ were slightly higher for those who participated in the follow-up in midlife than for those who did not participate (effect sizes of 0.30 and 0.40, respectively; Trost & Bergman, 2004). Comparing Educational Level of the Parents between the two groups also revealed that there was a significant difference between the groups (X^2 [6] = 23.64, p < .001), especially concerning vocational training. Twice as many of the non-participants had parents that reported they had no vocational training (34.7% compared to 14.6% of the participants).

Örebro is a midsized Swedish town that has grown considerably, from about 80,000 to about 140,000 inhabitants, during the long time period covered in the data collections. It can be regarded as fairly representative of Swedish mainly urban communities, excluding the big cities. However, Bergman (1973) reported that the parents' education and the children's standardized achievement test results were slightly higher for the IDA Main Group Grade 6 Cohort than for Sweden as a whole (effect size 0.1). He also compared the average IQ in Grade 6 for the Main group to that of a normative sample, and expressed in IQ scores (M=100, SD=15) the average IQ for the IDA cohort was 4.7 points higher.

Regarding the Swedish and the local society, there are some key features covering the period 1970-2000 to be considered. First, higher education was, and still is, free of charge and "backdoors" existed for those leaving school with an incomplete education that made it possible for them to resume their education later in life. A university college was established in Örebro 1977 that earned university status in 1999, affecting the sociodemographics of the city.

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group.*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s**[2]
Broad data collection targeting the entire Grade 3 Cohort, 1965 *N*=1,031 (519 ♂ / 512 ♀) age 10	Peer relationships	Sociometric measures	*n*=965 (475 / 490), 94%, that were assessed *n*=910 (448 / 462), 88% assessed their peers	Been & Zetterblom, 1967
	School adjustment	Self-report questionnaire	*n*=973 (491 / 482), 94%	Beckne, 1966
	Semantic differential	Self-report questionnaire	*n*=835 (404 / 431), 81%	Magnusson et al., 1975
	Externalizing and internalizing school adjustment (e.g., aggression, concentration difficulties)	Teachers' ratings	*n*=965 (475 / 490), 94%	Magnusson et al., 1975
	Social background and other family characteristics.	Parents' questionnaire	*n*=993 (501/ 492), 96%	Magnusson et al., 1975
	Intellectual ability (Six tests, covering verbal, inductive, and spatial ability)	Standardized tests (Differential intelligence analysis, DIA)	*n*=967 (484 / 483), 94%	Magnusson et al., 1975
	School achievement	School grades	*n*=1,031 (517 / 514), 100%	Broman, 1974
		National tests	*n*=959 (477 / 482), 93%	Magnusson et al., 1975
Intensive study of peer relations and family conditions, in a subsample of extreme groups, Grade 5 *N*=90 age 12	Peer relationships Family conditions		*n*= 90, 100%	Adebäck, 1969
Broad data collection targeting the entire Grade 6 Cohort, 1968 *N*=1,106 (548 ♂ / 558 ♀) age 13	Peer relationships	Sociometric measures	*n*=1,100 (543/ 557), 99%	Magnusson et al., 1975
	School adjustment, semantic differential	Self-report questionnaire	*n*=1,038 (513/ 525), 94%	Magnusson et al., 1975
	Externalizing and internalizing school adjustment (e.g., aggression, concentration difficulties)	Teachers' ratings	*n*=1,097 (540 / 557), 99%	Magnusson et al., 1975

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group. (continued)*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s[2]**
Broad data collection targeting the entire Grade 6 Cohort, 1968 (cont.) *N*=1,106 (548 ♂ / 558 ♀) age 13	Social background and other family characteristics	Parents' questionnaire	*n*=1,078 (536 / 542), 97%	Magnusson et al., 1975
	Intellectual ability (Six tests, e.g., verbal, inductive, and spatial ability)	Standardized tests (Differential intelligence analysis, DIA)	*n*=1,090 (540/ 550), 98%	Magnusson et al., 1975
	School achievement	School grades	*n*=1,096 (543 / 553), 99%	Broman, 1974
		National tests	*n*=935 (460 / 475), 84%	Magnusson et al., 1975
	Educational plans & aspirations, thoughts about vocations, vocational plans, and aspirations	Self-report questionnaire	*n*=1,051 (522/ 529), 95%	Magnusson et al., 1975
	Creativity (Two tests: Consequences and Divergent figures)	Tests	*n*=893 (447 / 446), 81%	Magnusson et al., 1975
Physiological data collected for the Biomedical subsample[3], 1968 *N*=252 age 13	Physical performance	Test cycling	*n*=223 (105 / 118), 88%	Magnusson et al., 1975
	Hormonal activity/reactivity (Catecholamines, adrenalin and noradrenalin excretion)	Urine samples	*n*=240 (177 complete tests, 98 / 78), 81%	Johansson, 1970
	Height and weight	Measured by research ass.	*n*=223 (105 / 118), 88%	Magnusson et al., 1975
	Brain activity, EEG	Coded by expert	*n*=223 (105 / 118), 88%	Magnusson et al., 1975
Broad data collection targeting the entire Grade 8 Cohort, 1970 *N*=1,193 (603 ♂ / 590 ♀) age 15	Peer relationships (self-rated and rated by class mates)	Sociometric measures, Self-report questionnaire	*n*=1,021 (519 / 502), 86%	Magnusson et al., 1975
	Teen-age norms about antisocial behaviors	Self-report questionnaire	*n*=1,058 (525/ 533), 89%	Magnusson et al., 1975
	Vocational and educational plans and aspirations	Self-report questionnaire	*n*=1,068 (539 / 529), 90%	Magnusson et al., 1975
	Vocational differential	Self-report questionnaire	*n*=1,061 (537 / 524), 89%	Magnusson et al., 1975
	Intellectual ability (Four tests, covering verbal, inductive, and spatial ability)	Standardized tests (WIT)	*n*=1,151 (575/ 576), 97%	Magnusson et al., 1975

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group. (continued)*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s**[2]
Broad data collection targeting the entire Grade 8 Cohort, 1970 (cont.) *N*=1,193 (603 ♂ / 590 ♀) age 15	School achievement	School grades	*n*=1,169 (594 / 575), 98%	Magnusson et al., 1975
		National tests	*n*=997 (498 / 497), 84%	Magnusson et al., 1975
	Psychiatric and psychosocial symptoms (girls only)	Self-report questionnaire	*n*=520, 88%	Crafoord, 1972
Bone ossification data , Biomedical subsample[3]**, 1970** *N*=250; age 15	Bone ossification	X-rays of hand bones, coded by expert	*n*=215 (92 / 123), 86%	Andersson, 1987
Broad data collection targeting the whole Grade 9 Cohort, 1971 *N*=1,174 (596 ♂ / 578 ♀) age 16	School adjustment, e.g., substance use, biological maturity	Self-report questionnaires	*n*=1,094 (554 / 540), 93%	Andersson, Magnusson, & Bergman, 1983
	Social background and other family characteristics	Parents' questionnaire	*n*= 1,015 (470 / 545), 86%	
	Vocational and educational plans and aspirations	Self-report questionnaires and parents' questionnaire	*n*=1,088 (543 / 545), 93%	
	Preferred activities and interests	Self-report questionnaire	*n*=1,086 (543 / 543), 93%	
	School achievement	Grades	*n*=1,159 (585 / 574), 99%	
	Creativity (Pukort, Headlines, Brick)	Standardized tests	*n*=1,070 (539 / 531), 91%	Elinder, 1974
	Criminality (boys only)	Self-report questionnaire	*n*=544 91%	Söderberg, 1975
Questionnaire data collected for the whole High school form cohort[4]**, 1972** *N*=863; age 17, form 1	School adjustment, vocational choices and personal economic situation	Self-report questionnaire	*n*=780, 90%	Beckne, 1981
Broad data collection targeting the whole High school form cohort, 1973 *N*=670 age 18, form 2	School adjustment, academic achievement and health aspects	Self-report questionnaire	*N*=404, *n*=298 (153 / 145), 74%	Samrén, 1975
	Educational and vocational choices	Self-report questionnaire	*n*=295 (151 / 144), 44%	
	Leisure-time activities	Self-report questionnaire	*n*=573 (278 / 259), 86%	
	Life-goals	Self-report questionnaire	*n*=504 (249 / 255), 75%	
	School achievement	Grades (mean)	*n*=436 (181 / 255), 61%	

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group. (continued)*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s**[2]
Broad data collection targeting the whole High school form cohort[5] *N*=260 original IDA-participants age 19, form 3	Anxiety	Self-report questionnaires	*n*=229 (127 / 102), 88%	af Klinteberg, Schalling, & Magnusson, 1986
	Life-goals	Self-report questionnaire	*n*=224 (124 / 100), 86%	
	School adjustment, academic achievement and health aspects	Self-report questionnaire	*n*=229 (125 / 104), 88%	
	Educational and vocational choices	Self-report questionnaire	*n*=215 (115 / 100) 83%	Wandahl, 1975
	School achievement	Grades	*n*=214 (113 / 101), 82%	
Data collected from official records for the Extended Cohort Total *N*=1,393 **and the Geographically restricted sample** *N*=930	Birth information	Official records	*n*=920 (471 / 449), 66%	Lagerström, Nyström, Bremme, Magnusson, & Eneroth, 1985
	Criminality	Official records 0-35 yrs	*n*=1,393 (710 / 683), 100%	e.g. Andersson & Magnusson, 1988; Zettergren, 2010
	Alcohol abuse	Official records 15-24 yrs		
	Psychiatric diagnoses, geographically restricted sample	Official records, expert assessment 0-24 yrs		
	Family structure during upbringing	Official records	*n*=1,385 (707 / 678), 99%	Bergman, Magnusson, Reichel, & Jakobsson, 1984
Data collection targeting the Extended Cohort, 1981 *N*=1,358; age 26	Life-situation variables, alcohol consumption, vocational, and educational variables	Self-report questionnaire	*n*=1,148 (545 / 603), 84%	Andersson, Magnusson, Lind, & Bergman, 1985
Broad data collection targeting the Biomedical Subsample[3]**, 1982** Extended Cohort *N*=250 age 27	Upbringing, life-situation, family, social support, health, drug use, Type A behavior, and life events, etc.	Personal interview and hand-outs/questionnaires	*n*=198 (97 / 101), 79%	Backenroth, Magnusson, & Dunér, 1983
	> 50 biomedical markers, e.g., blood pressure, triglycerides, hormones, MAO activity, Hb, cortisol. Fertility.	Medical examination Blood and urine samples	*n*=173, (85 / 88), 69%	Andersson, Lagerstrom, & Magnusson, 1989
	Intellectual ability (Seven tests, e.g., synonyms, blocks, and figures)	Standardized tests (SRB)	*n*=171, 68%	Backenroth et al., 1983

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group. (continued)*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s[2]**
Broad data collection targeting the Extended Cohort, 1998 *N*=639 (females only[6]) age 43	Social background, vocational and educational career, current life situation, job satisfaction, stress sources and reactions, life event history, health, life goals, subjective well-being, smoking and alcohol, social relationships, safety and violence, etc.	Personal interview and 14 self-report questionnaires	*n*=569, 89%	Bergman, 2000
Intensive Psychological-medical investigation sample, 1998 *N*= 479 (females only[6]) age 43	Health status	Physical examination	*n*=369, 77%	Bergman, 2000
	Biomedical markers, e.g., blood pressure, catecholamine, cortisol, blood sugar, triglycerides	Blood and urine samples	*n*=369, 77%	Bergman, 2000
	Physical health, pregnancies, use of medicine, health-related life style, neck and shoulder problems, life satisfaction, positive and negative affectivity, substance use, personality, mental health, safety and violence	5 medical staff questionnaires 8 self-report questionnaires	*n*=369, 77%	Bergman, 2000
	Episodic memory	Short test	*n*=369, 77%	Bergman, 2000
	Psychiatric diagnoses (DSM III), GAF	Psychiatric examination	*n*=205, 43%	Bergman, 2000
	Stress hormones	Urine and saliva samples	*n*=218, 46%	Bergman, 2000
	Bone density	Medical examination	*n*=339, 71%	Bergman, 2000
Follow-up survey from the data collection in 1998 targeting the Extended Cohort of women participating at age 43, 2002 *N*=569 (females only); age 47	Social background factors, life satisfaction, health-related issues including life style, substance use etc.	Self-report questionnaire	*n*=512, 90%	Wångby, 2004

Table 1. *Overview of IDA major data collections and variables 1965-2005. Main Group. (continued)*

General description, target sample/pop., year, N (males/females), age[1]	**Variables/variable areas**	**Data source(s)**	**Number of participants for which data are available (*n*) (males/females), participation rate (%)**	**Reference/s[2]**
Broad data collection targeting the original Grade 3 Cohort, 2002-2003 *N*=519 (males only) age 47-48	Mostly identical variables to those collected in the personal interview with the Extended Cohort of women, age 43	Personal interview	*n*=393, 76%	Trost & Bergman, 2004
	Substance use, physical health, partner relations, work-related attitudes and experiences, life satisfaction, etc.	8 self-report questionnaires	Average *n*=391, 75%	See Trost & Bergman, 2004, for detailed description of attrition
Follow-up survey from the data collection in 1998 targeting the Extended Cohort of women participating at age 43, 2004 *N*=569 (females only) age 49	Family, children, and occupation, life and work satisfaction, feelings and emotions, health, menopause, and more	Extensive self-report questionnaire	*n*=514, 90%	Lindfors, 2004

Note: When the first data collection was conducted in 1965, the 3rd grade cohort, referred to as the Main Group, consisted of 1,031 school children. Of these, 519 were boys and 512 were girls. All new students that moved in to the community during the school years (3rd-9th grade) were added to the Main Group as new data collections were conducted. This enlarged group is called the Extended Cohort and it constitutes the target population in many follow-ups in adulthood (*N*=1,392, 682 ♀, 710 ♂).
N=target population/sample, *n*=number of participants for which data are available, participation rate, i.e., percentage of target population/sample that participates.
[1] Information about the target sample is, if nothing else is stated, taken from Zettergren (2011). In some instances, there is no information on the gender distribution of the target sample. However, gender distribution is usually reported in individual publications from the program, and can thus be found in the fourth column of the table.
[2] Information about the number of participants for which data are available is taken from technical reports and IDA-reports within the IDA program as well as other publications on the IDA-material.
[3]A representative subsample of nine school classes taken from the Grade 6 Cohort
[4] The form cohort consists of those who continued their schooling after the 9 years of mandatory school.
[5] The three-year form is a theoretical stream with reduced cohort size. Additional participants from the general form cohort were not included.
[6] The psychological-medical investigation sample included all women that belonged to the Biological Subsample, as well as all women in the main group that were living in Örebro county at the time of the data collection.

Second, unemployment rates were low, the gross income distribution was very compressed, and the net income distribution even more compressed due to very high marginal taxes. Third, women have increasingly entered the labor force from the 1970's and onwards, a trend made possible by access to inexpensive day care for small children. Fourth, strong incentives existed for both parents to work because no tax deductions were given to families where only one parent worked. Finally, a strong social safety net existed so that the unemployed and chronically ill received social benefits, which were often only marginally lower than the net earnings from a low-paying job. For more detailed information about the Swedish society surrounding the IDA participants, see Bergman et al. (2014).

Considering the high participation rates in the majority of the data collections within the IDA-program and the many similarities between the IDA Örebro cohort and cohorts in other Swedish urban communities, it is reasonable to argue that IDA findings would be similar to what would have been found if we had studied a representative national rather than geographically restricted urban sample from the same time period and of the same age. However, it is less certain to what extent the IDA findings would generalize to the present time and to cohorts from other countries, perhaps exempting the Nordic countries.

Overview of Variables in the IDA Data Collections for the Main Group

Table 1 gives an overview of variables for which data have been collected throughout the program so far. The large scope of the data collected in IDA makes it necessary to restrict the presentation of variables to those of more general interest and that were collected for samples of reasonably high quality with regard to size and participation rate. Hence, variables are normally not presented that are based on data for small extreme groups or collected in certain minor follow-up studies at adult age.

Important variables were also collected from official records:

- Birth records (gestational age, birth weight, and more).
- Family structure during upbringing 0-18 years (parental custodians and change of it at different ages).
- Psychiatric diagnoses (0-24 years) according to DSM III in different age spans.
- Criminal offences (0-35 years). Suspicions of crime and number of offences of different types in different age spans.
- Registered alcohol abuse information (15-24 years) from all possible local and national sources.
- Family structure during upbringing from official records.

IDA Research and Publications

Based on the rich data in IDA, extensive longitudinal research has been undertaken in a broad variety of research areas starting in the late 1960's. The research is still ongoing and there are plans for future data collections and research. The first years, the research was almost exclusively carried out by researchers within the IDA program and their doctoral students. However, in later years researchers outside the program have increasingly collaborated with IDA, and in some cases used IDA data for research within their own projects. Initially, research within the IDA program concerned school children, often focusing on different aspects of school adjustment, for instance studies of explanatory factors related to peer relations, early criminal career, and the relations between different types of adjustment, as well as studies of cognitive development in relation to background factors and school achievement. Parts of the early research are overviewed in the first international book about IDA (Magnusson et al., 1975), which also presents an overview of the IDA program, including the early data collections and main variables.

When data from adulthood had become available, the area of research broadened and, for instance, included studies of the long-term outcomes related to girls' early biological maturation (Stattin & Magnusson, 1990), of positive and negative factors in relation to health and stress (Lindfors & Lundberg, 2006), of alcohol problems in a developmental perspective (Andersson 1988), of risk and protective factors for criminality (see Corovic, Andershed, Colins, & Andershed, 2017, for a review on IDA and criminality), as well as a series of studies on the importance of intelligence for the later vocational and educational career and adjustment (Bergman & Ferrer Wreder, 2014), and for health in midlife (Modig & Bergman, 2012). Peer relations (Zettergren, Bergman, & Wångby, 2006) and subjective well-being (Daukantaite & Bergman, 2005) have also been studied in a long-term developmental perspective.

From a methodological standpoint, most IDA research has used variable-oriented methods but a fair number of studies have been conducted within a person-oriented research paradigm, often focusing on patterns of adjustment and the development of homogeneous groups of individuals characterized by such patterns. These studies have been guided by the holistic-interactionistic theoretical framework (Magnusson, 1988, see also Stattin & Magnusson's [1996] study of antisocial behaviors in a holistic perspective) and by the formulation of the modern person-oriented approach (Bergman & Magnusson, 1997).

For researchers considering collaborating with the IDA-program researchers, or just using IDA data, it is helpful to obtain information about relevant previous publications – both as a starting point for the planned research, and to avoid repeating research already carried out within IDA. The IDA program has, as yet, resulted in more than 500 international publications, and it is not possible to provide an overview of all major publications in this paper. However, further information can be obtained from the IDA principal investigators, Henrik Andershed and Anna-Karin Andershed at Örebro University. A list of publications is also available on the IDA website: www.oru.se/theidaprogram.

Current Research and Planned Future Data Collections

Previous research has shown that several life domains with their more specific factors can be important for understanding human psychosocial development and adjustment. These domains have been labeled in different ways in the literature but can be categorized as follows; (i) Vocational, educational development, and economy; (ii) Physical health; (iii) Mental health and functioning; (iv) Social adjustment; (v) Personality and psychobiology, and; (vi) Opportunities for well-being. These domains have all been measured via multiple variables and at several time points in IDA, sometimes across developmental periods of many decades. Empirical studies based on IDA data have been conducted and published within all these domains. However, given the very large number of variables collected, a large number of important research questions for which IDA provide excellent data have so far not been addressed. The above-mentioned domains all constitute bases for different research areas but they could also be combined in a study done within a holistic-interactionistic framework where a person-oriented approach is applied. Research is presently ongoing in the IDA program in many of these domains.

The vast majority of the IDA Main Group participants were born in 1955. In 2018 they will be 63 years old and close to retirement. Thus, they are approaching a phase of their lives that implies many substantial transitions. A new data collection is planned but its timing is dependent on the availability of funding. The data collection will target the Extended Cohort and will at a minimum involve self-report questionnaires and information and updates from records/ registers. We also have the ambition to conduct medical exams, cognitive testing, and assess physical activity. Furthermore, the plan is to conduct repeated assessments ahead of, and after the mean retirement age. It is also our intention to continue to follow the IDA participants through their old age.

There is indeed a great need to better understand how individuals develop psychosocially as they age, and not the least what factors and interactions between factors that are associated with positive and negative psychosocial adjustment in elderly individuals. The increasing ageing population is a global challenge for the 21st century, and numerous studies in many countries have been concerned with this topic. However, existing research has mostly been mono-disciplinary and focused on one single domain of ageing at a time, omitting the study of how various domains in life can interact. Also, very few existing studies have studied ageing in a life-span perspective; that is, they cannot contribute to the understanding of how objective and subjective factors earlier in life can impact the experiences of ageing.

Ageing is a period in life with great changes including experiencing the end of a long working life, seeing friends and relatives fall sick and pass away, and starting to more closely see the end of one's own life. The aging individual has now developed what can be seen as an objective and subjective life history. The objective one concerns matters such as: What level and type of education did he/she acquire in life? Income and private economy? What kind of work and positions? Retirement or plans thereof? Intimate partners, marriage, and children? Friends and social network? Mental health/history of psychiatric problems? Physical health/history of medical problems, physical activity, and food habits? Utilization of modern techniques such as computers, smart phones, and social media?

The subjective history has to do with own opinions about work, retirement satisfaction, opinion and satisfaction about his/her economy, as well as satisfaction with intimate relationships, relationship to children, and the relationships to friends and relatives, subjective well-being, etc. It also has to do with the coping with, and subjective opinions about, one's own physical and mental health history and current state. To fully understand how and why elderly people adapt as they do to the ageing process, we need to study this in a life-span perspective because the earlier history and experiences of the person will likely impact his/her current and future well-being. Here, the IDA program provides a unique possibility to study the importance for the ageing process of multiple domains and their specific objective and subjective factors or variables.

The holistic-interactionistic perspective of human development and the associated person-oriented approach will provide a continued framework for the conducted research and for the new data to be collected in the IDA program. Among other things, this means that special consideration will be given to securing that, as far as possible, all important factors within the study area are included. In contrast to standard approaches where some of these factors are treated as only control variables or confounders, it will be strived for including them as parts of an indivisible pattern of information. This has implications for the choice of the variables to be included and for the scaling of the variables.

The planned IDA research on the ageing process will be concerned with creating a better understanding of which domains and specific objective and subjective factors that are the most important determinants of positive and negative psychosocial adjustment (e.g., mental health, social adjustment, subjective well-being). We also want to better understand which interactions/combinations of these factors are linked to positive and negative psychosocial adjustment. Of course, future research will largely be guided by the domains already focused in the IDA program (mentioned above), and the planned research areas can be broadly described as concerning psychosocial adjustment in ageing individuals in relation to:

- Vocational, educational development, and economy in a life-span perspective.
- Physical health in a life-span perspective.

- Mental health and functioning in a life-span perspective.
- Social adjustment, violence, and criminality in a life-span perspective.
- Personality and psychobiology in a life-span perspective.
- Opportunities for well-being such as life choices and turning points in a life-span perspective.
- Gender differences and similarities in terms of the most important factors for understanding psychosocial adjustment.

Ethics, Access to Data, and Collaboration with IDA

The ability to conduct successful longitudinal research is related to the ability to maintain a trusting relationship between respondents and researchers. Ethical considerations, confidentiality, communication, feedback, and data security are some of the components that have always been taken very seriously in the IDA program (see e.g., Trost & Bergman, 2004). This, we believe, has contributed to the relatively low rates of attrition, with very few individuals who have actively chosen not to participate. The IDA program has been examined by ethical committees on several different occasions. The principal investigators have continuously had an open relationship to the media and have reported back to the participants regarding the importance of their participation, how they have contributed to research, and what the research has resulted in. An important part has been the consistent use of reference groups, at school age including parents and teachers and at adult age including the participants. They have been given the opportunity to comment on and influence new planned data collections. This strategy of openness and transparency will be applied in future data collections as well.

We welcome researchers to use the IDA data for answering important research questions. But considering the vast amount of research that has already been carried out within the IDA program, it is important to begin with ascertaining that the planned research does not lead to double publications. As pointed out above, IDA has strict rules and ethical guidelines for researchers who use the data. These rules and guidelines stipulate how to handle the data, and how to describe the IDA program in publications, grant applications, etc. Before any researcher is provided access to data, a written agreement is established between the IDA program and the researcher interested in using IDA data. The agreement states the purpose and scope of the proposed research and that the IDA rules and guidelines are to be adhered to.

Summary and Conclusions

As previously mentioned, so far the IDA program has generated more than 500 international publications and it is by several researchers considered one of the most important prospective longitudinal studies in the world within developmental psychology (see e.g., Farrington, 2015; Lerner & Schwab, 1991). It is also one of few large-scale prospective longitudinal programs that have included both men and women. In this article, we described the great potential of the IDA program – both in the form of future research within the program and in the form of researchers outside the program using IDA data. Now, when the IDA participants have reached their 60's, the program opens up for addressing important questions about ageing in a life-span perspective, and for providing answers that are not only of area-specific relevance but also contribute to a broader understanding of the developmental process occurring simultaneously across many areas.

All longitudinal studies are characterized by some missing data in most variables, and also by sample attrition. Most commonly, these problems are rather severe, in many cases leading to a reduction of the sample the longitudinal analyses are carried out on to less than half the original sample. To some extent, this data quality problem can be handled by modern methods of statistical analysis, for instance multiple imputation or calibration, but such techniques offer no panacea. The remaining data quality problem is probably often larger than we like to believe. A special strength of the IDA data is the high participation rate in all major data collections, spanning from middle childhood to midlife. Therefore, it would in some cases be helpful to use IDA data for replication of the findings from a longitudinal study with extensive missing data.

A consideration when using IDA data (and data from other long-term longitudinal programs) is the issue of fading relevancy of the measurements of certain variables (Janson, 1990). For many standard concepts, the preferred measurement procedure has changed with time, and it might not always be possible using "old" IDA data to measure a concept according to the procedure that today is considered the golden standard. In the IDA database, raw data at the item level have been retained, which gives some possibilities for reconstructing scales according to best current procedures.

To sum up, the IDA program with its database offers great opportunities for important life-span developmental studies - research that in many cases cannot be done on any other existing longitudinal database. We hope that our presentation of the IDA program will encourage researchers to explore the possibility of using IDA data in their research. We also hope that the overview we provided of the IDA theoretical framework and data base has shown the strengths of the approach IDA took. It has led to the construction of a rich data base suitable for addressing a host of different scientific questions, some best addressed using a variable-oriented approach and some best addressed using a person-oriented approach.

Acknowledgments

Sadly, during the time this paper was authored, David Magnusson passed away. He was the creator of IDA and very successfully led the program through its first 30 years. Until the very end of his immensely productive scientific life, he was very much engaged in the development of the IDA program. His ability to inspire to and formulate important research questions never ceased, and his sharp intellect was evident in our scientific discussions. His contribution to theory development in developmental psychology cannot be emphasized enough, and he will be greatly missed by us and in the scientific community. After David Magnusson, Lars R. Bergman became the scientific leader and he successfully carried out new large data collections when the participants had reached midlife. Important collaborators then were Sheila Hodgins, Petra Lindfors, Ulf Lundberg, Magnus Sverke, and Bo Werner. In 2012, the leadership of IDA was transferred to Professors Henrik Andershed and Anna-Karin Andershed at Örebro University.

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Author contributions

Lars R. Bergman conceived of the idea and drafted the article. Anna-Karin Andershed and Henrik Andershed contributed with critical revisions. Anna Meehan crafted the table and summarized the data. All authors contributed to the final manuscript.

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The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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