Life-span development and myocardial infarction : an epidemiological study

Chapter 8: Summary.

Throughout this study, first myocardial infarction (MI) in adulthood is considered as the outcome of a developmental process that covers several stages of the human life-span. During this developmental process, a multitude of biological, behavioral, psychic, and social factors interact continuously in ever-changing configurations to bring about the life-threatening event of first MI in different phases of adulthood. It is argued that the biologically-oriented or contextualistic models that are currently employed to study the behavioral and psychosocial etiology of first MI may not be optimally suited to depicting the particular life-span developmental course that might be conducive to premature breakdown due to MI. Therefore, it is proposed that a life-span developmental orientation may solve some of the problems that arise with respect to the developmental description and explanation of particular behavioral and psychosocial factors that lead to first MI.

Chapter 1 describes and discusses life-span developmental psychology as a theoretical and methodological orientation, and it reviews the current literature about the Type A coronary-prone behavior pattern (TABP), stressful life events (SLE), and manifestations of vital exhaustion from this particular point of view.

First, it is argued that a life-span developmental methodological perspective allows one to answer such questions as: Is the vast majority of MI-cases characterized by TABP, irrespective of the age at which they suffered their first MI, or is TABP most prominent in early adulthood ? Does the same hold true for vital exhaustion prior to first MI, or does age play an entirely different role here ? Does every MI-case report the same SLE prior to first MI, despite vastly different childhood experiences, working conditions, career patterns, and family situations, or are such SLE clearly associated with age, TABP, vital exhaustion, or adverse life styles ?

Second, after reviewing some origins of life-span developmental psychology, it is argued that particular aspects of Charlotte Bühler's work on intra- and interindividual differences in life-span patterns of striving for "self-determination" that lead either to psychic integration and fulfillment or to partial or complete failure may provide a useful theoretical orientation for the present study.

Third, after discussing the current epidemiological literature about TABP, SLE, and vital exhaustion, in which the often contradictory results from retrospective and prospective studies are compared and from which several questions may be raised with respect to developmental aspects of these risk indicators, an integration of this evidence from a life-span developmental perspective is attempted.

Chapter 2 describes the study design and the methods that are employed from a life-span developmental perspective.

First, the criteria, selection procedures, and selection biases with respect to the 458 male participants in the present case-referent study [i.e., 133 cases with a clinically documented first MI (MI-cases), 133 neighborhood referents (NR), and 192 hospital referents (HR)] are described. Both MI-cases and HR constituted, in principle, consecutive series from two major hospitals in the South Limburg region of the Netherlands. They were approached between June 1980 and September 1983, and March 1982 and March 1985, respectively. The final refusal rates were 25% and 16% for MI-cases and HR, respectively, whereas 48% of the potential NR finally agreed to participate (*Appendix I*).

Analyses with respect to possible selection bias in participating and non-participating MI-cases (N = 20), based on completed and returned questionnaires (see below), showed that there were no significant differences between the two groups with respect to mean age, vital exhaustion, angina pectoris, current smoking, coffee consumption, use of sleeping pills, and sleep complaints within the last half year prior to first MI (Table 2.1., p.207). TABP could not be assessed in the non-participating cases because they were never interviewed (see below). Analyses with respect to mean age and primary reasons for hospitalization in participating and non-participating HR (N = 41) showed no differences between the two groups (Table 2.2., p.208). Thus, the present findings about MI-cases and HR may be said to be representative of the source population at large. The absence of selection bias in NR, however, could not be confirmed unequivocally; it is thought that older subjects were less willing to participate than younger, probably healthier, subjects.

Second, the age distribution is described. The present study was designed to sample all participating subjects in such a way that MI-cases, NR, and HR would be distributed more or less equally (at least 15 MI-cases, 15 NR, and 25 HR) among seven consecutive age strata, each spanning five years (i.e., 35-39, 40-44, etc. up to 65-69; Table 2.3., p.209). This particular time-consuming sampling strategy was adopted in order to deal with confounding with respect to age, cohort-membership, and time of measurement, a problem that is ever-present in life-span developmental psychology. As a result, the subsequent analyses could focus primarily on cohort-membership and on the various ways in which it may have influenced the individual developmental histories that lead to premature first MI in distinct phases of adulthood. In order to do this, age must be distributed as equally as possible over all three groups of participating subjects.

The mean age was 53.1 years (S.D. = 9.5 years) for MI-cases, 51.1 years (S.D. = 9.7 years) for HR, and 49.2 years (S.D. = 9.3 years) for NR. In spite of the sampling procedure, NR were significantly younger than MI-cases. This may have been due, in large part, to a substantial refusal rate among older NR. Therefore, in most analyses, age was still controlled or adjusted for. Sometimes the data were also analyzed separately for the three different cohorts that, from a life-span developmental perspective, are thought to represent clearly distinct developmental phases in adulthood, namely, the group aged 35-44 ("young adulthood"), that aged 45-59 ("middle age"), and that aged 60-69 ("beginning old age").

Third, the various instruments (questionnaires and interviews) that were employed to assess the life-span developmental histories of MI-cases, NR, and HR are described. In the hospital, MI-cases and HR filled out the following questionnaires:

(a) the Maastricht Questionnaire (MQ), assessing vital exhaustion prior to first MI;

(b) the London School of Hygiene Cardiovascular Questionnaire (LSHCQ), assessing current angina pectoris; and

(c) the Life Styles Questionnaire (LSQ), assessing adverse life styles (i.e., current smoking, alcohol use, and coffee consumption). NR completed the questionnaires prior to being interviewed at home.

The original MQ consisted of 37 items (Form A). In an independent follow-up study over more than four years, 21 of these items appeared to predict fatal or non-fatal MI, and these items constitute Form B. Below reference will be made to Forms A and B of the MQ and to an intermediate item pool of 58 items (including Form A) that was employed in the present study.

About two months after discharge from the hospital, MI-cases and HR were interviewed at home. During this interview, TABP was assessed by means of the Structured Interview (SI). In addition, the actual occurrence and the appraisal and coping strategies with respect to SLE over the entire life-span prior to first MI or hospitalization were assessed by means of the Structured Biographical Interview (SBI). NR were also interviewed at home with the SI and the SBI.

The SBI, the major instrument for data collection in the present study, consists of 47 SLE from three different domains of the life-span, namely, "Childhood & Adolescence" (11 SLE), "Work & Career" (16 SLE), and "Family & Social Life" (20 SLE; *Appendix II*). These particular SLE, and the manner and order in which they were included in the SBI, were selected after reviewing the current literature and a pilot study with some 30 MI-cases.

The main reason for using a structured interview to assess SLE instead of such established questionnaires as the Social Readjustment Rating Scale was that an interview was considered:

(a) the best suited for assessing relevant SLE from earlier developmental phases that may have influenced physical and mental health in later life to a considerable extent, although at the actual time of occurrence these SLE may not have appeared to have such potential ("sleeper" effects);

(b) most efficient, in that the actual occurrence of a SLE in any developmental phase may be assessed as precisely as possible while, at the same time, the idiosyncratic anticipatory, appraisal, and coping strategies that were employed with respect to each SLE may also be assessed; and

(c) most likely to prevent retrospective bias, in that an interview situation enables the interviewer to directly check the replies given and to discuss important issues when necessary.

Although, in all, nine interviewers performed these 458 SI and SBI, it was shown that there were no intra-interviewer differences with respect to the SBI-assessments of SLE in MI-cases, NR, and HR, both in general and with respect to the three developmental domains (Table 2.5., p.211). Moreover, it was demonstrated that there was no retrospective bias ("search for meaning") in the SBI-data from the MI-cases, when the SLE reported by cases interviewed shortly after their coronary event were compared with those from cases interviewed much later. Nor were there any significant differences with respect to mean age or TABP (Table 2.6., p.212).

Fourth, the various statistical procedures that were employed to analyze the questionnaire and interview data from MI-cases, NR, and HR are described.

In general, differences in overall and cohort-specific occurrences of TABP, vital exhaustion, and SLE were tested, first, by computing uni-variate Chi^2-, F-, and t-tests. Second, estimated relative risks for first MI (and the corresponding 95% test-based confidence intervals) that are associated with TABP, vital exhaustion, and SLE were calculated using both crude and adjusted, as well as standardized, estimates of *relative risk*. In some instances, other risk indicators measured in this study (i.e., age, angina pectoris, and current smoking) were also included in these analyses. Finally, some multiple logistic regression analyses were performed in which TABP, vital exhaustion, SLE, and other risk indicators, as well as their interactions with age, were included. Estimated relative risks and 95% confidence intervals were also calculated from these latter analyses.

Chapter 3 describes hypotheses and findings with respect to TABP. These hypotheses are that:

(1) TABP, in general, occurs more often in MI-cases than in referents; and that

(2) TABP constitutes an independent behavioral risk indicator for first MI when controlling separately for some other risk indicators for coronary heart disease (CHD).

Furthermore, the issue of whether TABP is associated with particular SLE over the life-span is explored.

The major findings may be summarized as follows:

First, TABP occurred significantly more often in MI-cases than in both referent groups, thus corroborating hypothesis 1 (Table 3.1., p.213).

Second, Type A MI-cases suffered their first MIs at a significantly younger age than Type B cases.

Third, there were significant associations between TABP and cohort-membership. That is, although in each referent series the overall age-adjusted relative risks for first MI associated with TABP were significantly elevated (i.e., 2.37 in the NR-series and 2.29 in the HR-series), this risk declined with increasing age, from 4.04 and 3.44, respectively, (age 35-44: "young adulthood"), to 2.14 and 2.98 (age 45-59: "middle age"), to non-significant associations, i.e., 1.66 and 1.12, after age 60 ("beginning old age"; Table 3.3., p.215). These associations between TABP and elevated risk for first MI were not confounded by angina pectoris, current smoking, or excessive coffee consumption, thus corroborating hypothesis 2.

Finally, Type A subjects (N = 247; 54%), in general, reported more SLE [i.e., six in all (13%)] in the SBI-domains of "Childhood & Adolescence", "Work & Career", and "Family & Social Life" than Type B subjects (N = 211, 46%; Table 3.4.a through 3.4.c, p.216-218) . TABP in adult subjects was associated with financial hardships during the formative years and with major conflicts both at work and in family and social life. The question of whether TABP thus acts as a confounder with respect to the reporting of SLE over the life-span is analyzed and discussed in Chapter 5.

Chapter 4 describes hypotheses and findings with respect to manifestations of vital exhaustion. These hypotheses are that:

(1) vital exhaustion, in general, occurs more often in MI-cases than in referents; that

(2) vital exhaustion, in general, constitutes an independent psychosocial risk indicator for first MI when controlling separately for other risk indicators for CHD; that

(3) subjects who are assessed as being Type A are at an elevated risk of becoming "vitally exhausted"; that

(4) Type A subjects who are "vitally exhausted" are at a more elevated risk of suffering first MI than Type A subjects who are not; and that

(5) when controlling for vital exhaustion, Type A subjects are at a more elevated risk of suffering first MI than Type B subjects.

Furthermore, the issue of whether vital exhaustion is associated with particular SLE over the life-span is explored.

The major findings may be summarized as follows:

First, MI-cases scored significantly higher on Form B of the MQ, used to assess vital exhaustion, than both referent groups, thus corroborating hypothesis 1. Unlike the findings with respect to TABP, HR scored significantly higher on this Form than NR.

Second, the significant overall age-adjusted relative risks for first MI associated with vital exhaustion (Form B) were 7.35 in the NR-series and 2.90 in the HR-series (Table 4.1., p.219).

Third, analyses of each of the 58 items from the intermediate item pool demonstrated that, in both referent series, 46 items (79%) constituted significantly elevated estimated relative risks for first MI, although not all discriminating items were similar in each series (Table 4.2., p.220-223). In neither of the referent series were all 21 items of Form B associated with such risks. Some items from the intermediate item pool constituted relative risks that were at least as high as those associated with the items of Form B. This applied, in particular, to two items about "Increased irritability" prior to first MI, with associated estimated relative risks of 8.66 and 7.66 (NR-series) and of 7.42 and 6.00 (HR-series), respectively (Table 4.2.).

Fourth, after dividing the MQ scores (Form B) into tertiles, the intermediate and high degrees of vital exhaustion - expressed both as unadjusted standardized relative risks and as standardized risks after adjusting separately for age (i.e., the three cohorts 35-44, 45-59, and 60-69), angina pectoris, and current smoking - remained positively and significantly associated with first MI in both referent series, thus corroborating hypothesis 2 (Table 4.3., p.224). In the NR-series, for the highest tertile, the unadjusted standardized relative risk was 11.96; the separately adjusted risks were 14.08 for age (thus indicating that age might exert a modifying influence), 9.41 for an-

gina pectoris, and 10.10 for current smoking. In the HR-series, the unadjusted risk was 5.03; the adjusted ones were 5.31, 4.29, and 4.69, respectively. Thus, in general, the association of vital exhaustion with first MI was not confounded by these other risk indicators. Since these findings were based on the prospectively validated Form B of the MQ, it is argued that it is unlikely that these particular findings were strongly influenced by retrospective bias.

Fifth, "healthy" Type A subjects (i.e., those who were free of angina pectoris; N = 220) generally scored higher on Form B of the MQ than likewise categorized Type B subjects (N = 193), thus corroborating hypothesis 3 (Table 4.4., p.225).

Sixth, "vitally exhausted" Type A subjects were at a significantly elevated risk of suffering first MI. That is, when all subjects were categorized both as being either Type A or Type B and as being either "vital" or "vitally exhausted" (based on the median score of the combined referent groups), and when "vital" Type B subjects were employed as the reference category, the standardized estimated relative risks for first MI associated with being a "vitally exhausted" Type A were 11.02 in the NR-series and 5.20 in the HR-series, thus corroborating hypothesis 4 (Table 4.5., p.226). These substantially elevated risks in both referent series suggest a modifying effect of vital exhaustion with respect to the actual influence of TABP. This, in pairwise analyses, appeared in fact to be the case.

Seventh, it was demonstrated that when the estimated relative risk associated with TABP was standardized for vital exhaustion, this risk estimate still reached significance in the HR-series but not in the NR-series (i.e., 1.98 and 1.62, respectively). Thus, hypothesis 5 was only corroborated in part.

Finally, "vitally exhausted" subjects (N = 280; 61%), in general, reported more SLE [i.e., 15 in all (32%)] in the SBI-domains of "Childhood & Adolescence", "Work & Career", and "Family & Social Life" than "vital" subjects (N = 178; 39%) (Table 4.7.a through 4.7.c p.228-230). Only one SLE was reported more often by "vital" subjects. Vital exhaustion in adult subjects was associated, in general, with adverse living conditions during the formative years, with the disruption of one's working pattern and career opportunities, and with prolonged or serious educational problems and familial conflicts. Some of these SLE were also reported significantly more often by Type A subjects. The question of whether vital exhaustion thus acts as a confounder with

respect to the reporting of SLE over the life-span is analyzed and discussed in Chapter 5.

Chapter 5 describes hypotheses and findings with respect to the occurrence of SLE over the life-span. These hypotheses are that:

(1) SLE associated with "Childhood & Adolescence", "Work & Career", and "Family & Social Life", in general, occur more often in MI-cases than in referents; and that

(2) SLE associated with "Childhood & Adolescence", "Work & Career", and "Family & Social Life", in general, constitute independent psychosocial risk indicators for first MI.

Furthermore, the issues of whether TABP exerts a moderating influence on the associations of SLE in the above-mentioned domains with first MI, and whether SLE in these domains exert a moderating influence on the association of vital exhaustion with first MI are explored.

The major findings may be summarized as follows:

First, MI-cases reported a significantly higher mean occurrence of SLE over the life-span, in general, than both referent groups, thus corroborating hypothesis 1 (Table 5.1., p.231). The findings regarding the three separate domains indicate that "Family & Social Life", in particular, was characterized by a significantly higher mean occurrence of SLE in MI-cases in both referent series. With "Work & Career" and "Childhood & Adolescence", only the HR-series showed significantly higher mean occurrence rates of SLE.

Second, in the HR-series, 18 SLE (38%) were reported significantly more often by MI-cases; in the NR-series this was true for eight SLE (17%; Table 5.2.a through 5.2.c, p.232-234). Two SLE (4%) were reported significantly more often by HR than by MI-cases; four SLE (9%) were reported more often by NR. Eight SLE (17%) were reported more often by NR than by HR, while two SLE (4%) were reported more often by HR than by NR. After demonstrating that seven of the latter ten SLE only distinguished between both referent groups, and not between these groups and MI-cases,

the data from both referent groups were combined in some analyses in order to enhance statistical power.

Third, in the HR-series, 19 SLE (40%) were associated with significantly elevated crude estimated relative risks for first MI; in the NR-series this was true for eight SLE (17%), thus corroborating hypothesis 2 (Table 5.3.a through 5.3.c, p.235-237). Some of these crude risks appeared to be rather "high", in particular in "Family & Social Life" [e.g., "Prolonged/serious conflicts with children away from home": 6.78 (NR-series), and 2.96 (HR-series); "Prolonged/serious educational problems with children": 4.27, and 2.60, respectively).

Fourth, in the combined referent series, 14 SLE (30%) were associated with significantly elevated crude relative risks for first MI (Table 5.4.a through 5.4.c, p.238-240). After adjusting for cohort-membership (i.e., ages 35-44, 45-59, and 60-69) and after simultaneously controlling for TABP, 12 SLE (25%) retained a positive and significant association with first MI. Thus, the associations of two SLE (4%) with first MI were confounded by TABP and/or age. Furthermore, particular cohort effects were identified with respect to nine SLE (19%) on the basis of a significant heterogeneity Chi^2. These effects applied mostly to "young" Type A MI-cases (e.g., "Voluntary search for other job(s)": crude estimated relative risk: 8.00; "Increased responsibility at work": 6.83; and "Divorce": 5.14) or to "middle aged" Type A cases (e.g., "Prolonged/serious marital conflicts": 2.96).

Fifth, when, as with TAB P, the issue of whether vital exhaustion may have served as a moderator was explored, it was found that, in the HR-series, the associations of five SLE (10%) with first MI were confounded by vital exhaustion and/or age(Table 5.5.a through 5.5.c, p.241-243). In the NR-series, this occurred with respect to four SLE (8%). Furthermore, cohort effects were observed with respect to seven SLE (14%) in the HR-series and three SLE (6%) in the NR-series. These effects applied mostly to "young" MI-cases who were "vitally exhausted" [e.g., "Increased responsibility at work": crude estimated relative risk: 5.13 (NR-series), and "Past unemployment": 3.59 (HR-series)].

Finally, in three series of multiple logistic regression analyses, in which the data from both referent groups were combined and in which each SLE was entered separately while controlling simultaneously for age (i.e., the three cohorts 35-44, 45-59, and

60-69), current smoking, TABP, vital exhaustion, and educational level, nine SLE (19%) retained positive and significant associations with first MI (Table 5.6., p.244). Six of these SLE occurred in "Family & Social Life". The most important ones were "Prolonged/serious conflicts with children away from home": estimated relative risk: 3.65 and "Prolonged/serious financial problems": 2.37. The two SLE that discriminated with respect to "Work & Career" were "Prospects for promotion (unrealized)": estimated relative risk: 1.97 and "Work place closed down": 1.70. Finally, "Prolonged financial problems" during the formative years retained a twofold relative risk for first MI. Furthermore, in the same analyses, significant positive interactions with age (i.e., cohort effects) were found with respect to four SLE (9%), namely, "Voluntary search for other job(s)": estimated relative risk: 4.99 and "Increased responsibility at work": 4.93, in "young adulthood" (age 35-44); "Prolonged/serious marital conflicts": 3.57, in "middle age" (age 45-59); and "Prolonged/serious illness (spouse)": 2.40 in "beginning old age" (age 60-69) (Table 5.7., p.245).

Chapters 6 and 7 discuss the findings presented in Chapters 3 through 5. The former pertains to the findings about all MI-cases and the latter describes the life-span developmental patterns of three MI-cases, one from each cohort, who are thought to be representative of the entire study base. These biographies are discussed against the background of the life-span developmental notions about "self-determination" that were proposed by Charlotte Bühler and discussed in Chapter 1.

First, in Chapter 6, the associations of TABP with first MI are discussed. It is reasoned that they are, in general, in accordance with the associations reported in most case-referent studies and, moreover, that they are of the same magnitude as found in most prospective studies. In other words, the present study confirms that TABP constitutes a behavioral risk indicator for first MI that is not confounded by angina pectoris, current smoking, and coffee consumption. The strong association of TABP with risk for first MI in the earliest developmental phase in adulthood, but much less so in the later ones, is a finding that deserves particular attention. Finally, it is argued that these findings may have been influenced to some extent by interviewer bias. It is much less likely that they were influenced by retrospective bias. That is, on the basis of several empirical arguments (i.e., stability over the life-span, differen-

ces in outspokenness of TABP-characteristics before and after MI, and refusal rates among extreme Type A subjects) it appears as though the actual prevalence of TABP in the participating MI-cases has been underestimated.

Second, the associations of SLE with first MI are discussed. It is argued that these findings are, in general, in accordance with those from most case-referent studies. Thus, the present study also confirms that SLE constitute psychosocial risk indicators for first MI which, moreover, exert their influence over the entire life-span. That is, when the three developmental domains are considered separately, one finds that adverse living conditions during childhood and adolescence may very well contribute to the development of first MI in adulthood. It is also argued that disruptions in one's career (in particular "Unrealized prospects for promotion" and "Work place closed down") and longstanding conflicts at work are characteristic of future MI-cases. It is, above all, noteworthy that prolonged discord in the family and in social life - something which has not been reported on a similar scale in previous studies - appears to play the most important role in the life histories of future MI-cases. Attention is focused on the "chronic" character of most of these SLE and their probable longlasting influence on life-span development. Finally, it is reasoned that retrospective bias reflecting either a "search for meaning" or "selective forgetting" most likely did not influence the present findings to any substantial degree. On the other hand, it is possible that interviewer bias may have influenced them to some extent.

Third, the associations of vital exhaustion with first MI are discussed. It is argued that these findings are, in general, in accordance with those from previous retrospective studies that employed a preliminary version of the MQ. In this respect it is noteworthy that some 79% of the intermediate pool of MQ-items were positively and significantly associated with first MI. Of these, the items denoting "Increased irritability" deserve particular attention. Furthermore, it is reasoned that the risk estimate associated with vital exhaustion in the NR-series of the present study (i.e., more than sevenfold) is comparable to that obtained in the prospective study in which the MQ was validated, whereas the threefold estimate from the HR-series may represent an underestimation of the actual risk. It is argued in detail that it is unlikely that retrospective, recall, or selection bias (or "neuroticism") influenced these findings about vi-

tal exhaustion to a substantial extent, or that these findings were largely confounded by the other risk indicators that were included in the present study.

Fourth, the relationships between TABP, SLE, and first MI are discussed. With respect to the possible childhood origins of TABP, it is reasoned that "Prolonged financial problems", which may be representative of adverse living conditions during the formative years, contributed to the subsequent development of TABP. Furthermore, it is reasoned that the many conflict situations at work and in family and social life that adult Type A subjects confront may constitute major determinants both with respect to perpetuating TABP in adulthood and to developing first MI. It is thought in this respect that "irritability" may be central to both the construct of TABP and that of vital exhaustion.

Fifth, the relationships between TABP and vital exhaustion and their common association with first MI is discussed. On the basis of the modifying effect of vital exhaustion on TABP, which was established in the present study, it is proposed that this apparently synergistic relationship be investigated further. The concurrent presence of TABP and vital exhaustion appears to define a particular subgroup of subjects who may be at a highly elevated risk for a near-future coronary event.

Sixth, the relationships between SLE, vital exhaustion, and first MI are discussed. It is concluded, first, that a substantial number of SLE, which in previous studies appeared to be directly associated with first MI, may, in fact, only lead indirectly to this event, that is, through their primary association with vital exhaustion. Furthermore, it is reasoned that adverse living conditions in the formative years may be conducive to both vital exhaustion and first MI in adulthood. This reasoning also applies to the majority of reported SLE from "Work & Career" and "Family & Social Life". Thus, in future research, the pathways along which SLE develop and eventually lead to vital exhaustion and first MI should be studied in more detail. Finally, it is argued that these particular findings may be in accordance with current theoretical notions about "helplessness" as a result of continuous exposure to undesirable and uncontrollable SLE.

In Chapter 7, three life-span developmental histories of MI-cases representative of the three different cohorts are described in detail in order to illustrate the psychosocial, developmental contexts from which the above-mentioned SLE emerged (Table 7.1., p.246). This was thought necessary since the primarily epidemiological approach taken in Chapters 3 through 5 may not provide immediate insight into the psychological meaning of the behavioral and psychosocial risk indicators reported there.

First, it is concluded that the gradual accumulation of SLE over the life-span is more evident in these individual biographies than in the aggregate data presented before them.

Second, it becomes apparent that the psychosocial and environmental contexts in which the discriminating SLE occur differ widely between the three cohorts.

Third, the psychological impact of one and the same discriminating SLE may be different in different cohorts.

Fourth, most importantly, however, it is illustrated that there may not be one single universal constellation of SLE leading to first MI but rather a vast array of different pathways. The same SLE may be combined in unique configurations, conditional upon cohort-membership. It is also illustrated that events that do not actually occur may still play crucial roles in subsequent psychosocial development.

Finally, these three biographies are scrutinized against the background of Charlotte Bühler's notions of "self-determination" across the life-span. It is argued that two of the four concepts (i.e., "Self-limiting adaptation" and "Upholding internal order") which are used to describe the life-long striving for "self-determination" and the developmental processes that these concepts imply, may be useful heuristic terms to be employed in future research. These concepts appear to be able to combine epidemiological principles with the developmental insights thought necessary to understand why a certain individual developmental trajectory over the life-span, which is unique in many respects, may lead to the life-threatening event of first MI.