

What lies behind entrepreneurial intentions? Exploring nascent entrepreneurs' early belief systems

What lies behind entrepreneurial intentions?

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Mauri Laukkanen

Business School, University of Eastern Finland – Kuopio Campus, Kuopio, Finland

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Abstract

Purpose – Studies of entrepreneurial intentions (EIs) have become increasingly common, informed usually by Ajzen's (1991) theory of planned behaviour (TPB). Although the TPB postulates that beliefs determine EIs, the contents of the beliefs have not been properly studied, leaving EIs' cognitive underpinnings and cognitive approaches to influencing EIs unclear. To clarify the TPB/EI-belief nexus, the study examines the conceptual background of entrepreneurial cognitions and elicits the beliefs of a group of nascent micro entrepreneurs (NMEs) to compare them with their TPB attitudes and EIs, facilitating assessing their mutual consistency as implied by the TBP.

Design/methodology/approach – The respondents are entrepreneurial novice clients of a micro business advisory organisation. Their TPB attitudes and EIs were measured using standard TPB/EI methods. Comparative causal mapping (CCM) combined with semi-structured interviewing was used to reveal the NMEs' typical belief systems, presented as aggregated cause maps.

Findings – The NMEs have uniform, relatively detailed belief systems about entrepreneurship and micro business. The belief systems are consistent with theory- and context-based expectations and logically aligned with the NMEs' expressed TPB attitudes and EIs. CCM provides an accessible method for studying contents of entrepreneurial cognitions.

Research limitations/implications – It was not possible to study "entrepreneurship-negative" respondents or the intensity or origins of some specific beliefs.

Practical implications – Diagnosing and better understanding beliefs can benefit entrepreneurship education and development, in general or connected with TPB/EI studies.

Originality/value – The study reveals entrepreneurial belief systems systematically, evidently not done before generally or in terms of "everyday" micro entrepreneurship or TPB. It clarifies and supports the TPB notion that beliefs underpin actors' attitudes and intentions.

Keywords Knowledge/belief systems, Cognitive/comparative causal mapping, Entrepreneurial intentions, Theory of planned behaviour (TPB)

Paper type Research paper

Introduction

This study explores the beliefs a group of nascent micro entrepreneurs (NMEs) have about individual entrepreneurship and new micro firms (NMFs). At the background is the remarkable proliferation [1] of entrepreneurial intention (EI) research informed by Ajzen's (1991) theory of planned behaviour (TPB), and the observation that although the TPB

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postulates that actors' beliefs determine the EIs, the beliefs themselves are largely unresearched so far. This implies a major theoretic and pragmatic knowledge gap.

According to the TPB (Ajzen, 1991, 2002), intentions – “readiness to engage in a behavior” (Fishbein and Ajzen, 2010, p. 38) – depend on attitudes towards the behaviour (BA), observed social norms (SN) and perceived control of the behaviour (PBC). These, in turn, are “. . . a function of salient information, or beliefs, relevant to the behavior” (Ajzen, 1991, p. 189; Fishbein and Ajzen, 2010, p. 8ff), more specifically (1) behavioural beliefs (BF) about the consequences of the behaviour, defining attitudes towards the behaviour (BA), (2) normative beliefs (NB) about what important others expect, shaping observed SN, and (3) control beliefs (CB) about things that further or hinder the behaviour, defining PBC. Intentions are carried out if an opportunity arises and there is actual control. In general, TPB studies explain 30–45% of intentions and around 25% of behaviours (Armitage and Conner, 2001; Kautonen *et al.*, 2015).

TPB/EI variables are usually measured using large-n surveys and bipolar Likert-scale “belief statements” (Fishbein and Ajzen, 2010) such as (Iakovleva *et al.*, 2011): “I would rather own my own business than pursue another promising career” (BF + BA); “People who are important to me think that I should pursue a career as self-employed.” (NB + SN); “If I wanted to, I could easily become self-employed” (CB + PBC), and “I will probably start and run my own business one day” (EI). The responses – degrees of agree/disagree or likely/unlikely, etc. – are interpreted to indicate the strength of the beliefs and the attitudes, or how the outcomes are valued (Ajzen, 2006).

In TPB, beliefs are “subjective probabilities” (Fishbein and Ajzen, 2010, p. 215), which implies something held more or less probable, implying referents/propositions like “A is”, “A has X” or “A influences B.” More commonly (and here), beliefs are defined as “general propositions about the world which are (consciously) held to be true” (Good and McDowell, 2015, p. 493), i.e. people’s subjective knowledge that provides “. . . ontological representations of the world and comprise primary convictions about events, causes, agency and objects that subjects use and accept as veridical.” (Connors and Halligan, 2015, p. 1).

Although the TPB posits that beliefs guide attitudes and EIs, TPB/EI studies do not examine the underpinning beliefs and what they refer to (Ajzen (2011, p. 1123). The Likert-responses are taken to indicate the attitudes and the underpinning beliefs *combined*. Whilst quite sufficient for applying the TPB model, this also means that we cannot know, e.g. the positive or negative ideas why people want or do not want to become entrepreneurs, what they feel capable or incapable of doing about it, nor why, say, BA or PCB indicators have changed. The responses do not necessarily even indicate that the respondents would normally observe or that they even possess the assumed beliefs. Thus, entrepreneurial actors’ beliefs – in cognitive terms, retained knowledge and reasoning patterns – are still largely a “black box”, something known to exist but under-researched and not properly understood. This has also been noted in literature (Krueger, 2007; Liñán and Fayolle, 2015), maintaining that better understanding entrepreneurial beliefs, their formation and impact is important for illuminating the cognitive grounds of entrepreneurship and specific issues, such as the impact of cultural milieus or entrepreneurial education (Fayolle *et al.*, 2006; Valliere, 2017). Studying these issues can also provide new approaches to fostering entrepreneurship.

The study aims to address the above knowledge gap. First, theoretically by discussing the cognitive factors that underlie entrepreneurial beliefs and the TPB/EI-belief nexus. Second, the study discloses both the NMEs’ TPB attitudes and EIs using normal TPB/EI methods, and using semi-structured interviewing and comparative causal (aka cognitive) mapping (CCM), it reveals their belief systems about individual entrepreneurship and NMFs. This facilitates assessing the belief-TPB/EI linkage as a theoretical notion by considering the compatibility of the NMEs belief systems with established views about human reasoning and

belief formation, and by examining whether the NMEs' expressed beliefs and their TPB attitudes and EIs are logically consistent as the TPB posits.

In addition, the study contributes by addressing "everyday" entrepreneurship. Although macro-economically and socially important, this context is underemphasised compared with modish but rare growth-oriented entrepreneurship (Welter *et al.*, 2016). Second, we explore *what* entrepreneurial actors know (or ignore). This differs from extant entrepreneurial cognitive research (ECR), which emphasises *how* entrepreneurs think (Mitchell *et al.*, 2014). Notably, the content perspective has long characterised, e.g. management and organisation cognition (MOC) (Hodgkinson, 2015), but is remarkably rare in entrepreneurship.

The paper is structured as follows. The next section discusses human cognition and belief formation to clarify the belief-TPB/EI linkage and origins of beliefs. The third section describes the context, respondents and CCM methodology. The fourth presents the findings about the NMEs' belief systems. The fifth section discusses the study's results, implications and limitations, and suggests some directions for further research and entrepreneurship development. The conclusions sum up the study.

Conceptual background

Belief systems and reasoning

To navigate in the world, we must represent internally what exists, happened, or might happen in our external reality (Johnson-Laird, 2010; Kahnemann, 2012). To facilitate that, we possess large repositories (Chi and Ohlsson, 2005) of knowledge items and structures", . . . analogues of real-world or imaginary situations, events, or processes" (Nersessian, 2002, p. 141). These are retained in the long-term memory (LTM) (Baddeley, 2004) and recalled and updated or constructed in the limited-capacity working memory (WM). In literature, knowledge structures are called (causal) mental models (Johnson-Laird, 2010; Markman and Gentner, 2001) or belief systems (Bandura, 2001; Connors and Halligan, 2015), sometimes cognitive maps (Kearney and Kaplan, 1997).

Presently relevant is that belief systems underlie *deliberate* reasoning, thus influencing responses, decisions and behaviours (Sloman and Lagnado, 2015). This is possible because they are essentially *networks of causal propositions* (Hoffman and Klein, 2017) ("A causes B", "C follows B", etc.), based on people's knowledge and momentary perceptions and inferences about the focal domain's structure, mechanisms and states. Conscious reasoning involves recalling or constructing and running the models in the mind's eye, kinematically *simulating* how a given part of the world works, could work, or might have worked (Johnson-Laird, 2010). An important aspect here is *cognitive decoupling*: imagining hypothetical situations and performing *if-then* thought experiments (Evans and Stanovich, 2013).

Mental models/belief systems are theoretical, not directly observable phenomena, usually inferred from people's existing or, as here, specifically induced communications (Evans, 1998; Ifenthaler *et al.*, 2011; Rouse and Morris, 1986). It might be added that neuroscientific methods (Nicolau *et al.*, 2019) can reveal brain activities, e.g. causal thinking engaging the lateral prefrontal cortex (Khemlani *et al.*, 2014), but not what someone knows or thinks about something.

Origins of beliefs

Three interrelated main processes underlie beliefs. First, beliefs result from cumulative experiences (Cheng and Buehner, 2012; Wyer and Albarracín, 2005). In particular, intensive ones like growing in a successful entrepreneur's family or witnessing entrepreneurial failure can produce deep constructive or negative beliefs (Bandura, 1994).

Second, in terms of content, modern adults' knowledge and beliefs are largely socially transferred through cultural indoctrination, education, organisational arenas, and exposure to media and different information sources (Chi and Ohlsson, 2005). This also underlies so-called common knowledge and lay/naïve theories (Fiske and Taylor, 2021), e.g. about economic phenomena, and explain the everyday discourse prevalence of notions like entrepreneur, firm, profit or marketing.

Third, especially abstract, higher-level knowledge is internally generated not only by conscious deliberation but also unconscious processing, which underlies, e.g. domain experts' intuitive problem-solving (Chi, 2006). Notably, internal formation also involves both "cold" and "hot" cognition (Hodgkinson and Healey, 2011). One can not only adopt neutral beliefs, e.g. that entrepreneurship causes "X", but also associate the "X" with positive or negative attributes. This is how attitudes towards a behaviour and belief strength have been explained in the TPB (Ajzen, 1991, p. 189).

Belief-TPB/EI nexus

According to the TPB/EI model, beliefs determine or guide entrepreneurial attitudes (EA) and intentions. This implies a causal relation. How should that be understood?

In view of current wisdom about human cognition, it is unlikely that TPB/EI respondents have a specialised memory compartment and cognitive processor for TPB/EI responses. Instead, they will probably search their LTMs for relevant contents *and* apply momentary reasoning and imagination to create and simulate the perceived situation in their minds. A combination of these processes provides them the cognitive basis for ticking TPB/EI questionnaire boxes. It follows that the beliefs-TPB/EI linkage is a theoretical metaphor, not a causal relationship based on stable mediating processes. This is not uncommon. A comparable case is, e.g. cognitive dissonance (below). The cognitive processes that "cause" it cannot be shown, only observed that people behave in ways that can be interpreted as avoiding cognitive dissonance, supporting the hypothesis.

The above means that the elicited TPB/EI variables and causal beliefs are both underpinned by the same cognitive base of accumulated knowledge and subjective reasoning tendencies, disposing the person to respond in corresponding consistent ways. Conceivably, people could fabricate insincere responses for individual reasons or because that is customary in a secretive culture (Welter and Alex, 2012). As a rule, however, TPB/EI variables and causal beliefs should be mutually consistent both because of SN of trusting cultures and for cognitive reasons. Deliberate fabricating requires specific efforts which normal persons, being "cognitive economisers" (Fiske and Taylor, 2021), are likely to avoid in normal circumstances.

Figure 1 summarises the discussion. The left side describes cognitive factors and processes that underlie actors' deliberations and consequently their causal beliefs and TPB/EI measures. The right side outlines the TBP/EI model. The dotted boxes represent the conceptual spheres that CCM and TPB/EI studies encompass.

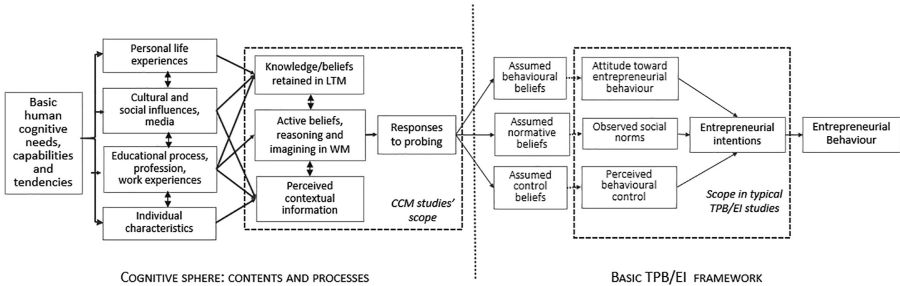


Figure 1.
Conceptual notions and
relationships in
the study

Understanding the NMEs' belief systems

The diverse origins of beliefs make it futile to predict what a single person might think and know about something. However, taken as a *group* in a specific situation and socio-cultural context, the NMEs' probable entrepreneurship-related beliefs can be anticipated.

First, the NMEs have normal human needs of understanding and maintaining mental balance and feeling cognitively secure. This implies comprehending their situation as prospective entrepreneurs by conceptualising the related phenomena and causal mechanisms using their prior knowledge and capabilities of recalling, explaining and predicting things (Kahneman, 2012; Sloman and Lagnado, 2015). A presently pertinent capability is *theory of mind*: projecting one's own thinking to others for reasoning about their minds to explain or predict their behaviours (Bender *et al.*, 2017; Fiske and Taylor, 2021). The NMEs will probably also use everyday logic to explain or predict, e.g. why people become entrepreneurs or why firms fail. This involves (Westmeyer, 2001) *teleological* and *functional* explanations that assume people certain motives or that phenomena serve some functions. Behaviours are commonly explained *tautologically* by projecting actors unique faculties or *environmentally* by assuming compelling conditions.

Keeping mental balance also implies less rational efforts. We all shun *cognitive dissonance* by maintaining felt consistency of beliefs, observations, decisions and behaviours (Fiske and Taylor, 2021; Wyer and Albarracín, 2005). This may be manifested as a *confirmation bias* and seeking supportive evidence and ignoring, even avoiding contradicting information. In the NMEs' case, this could mean emphasising the positive aspects of entrepreneurship and avoiding expressing contra-entrepreneurship beliefs. This can depend on whether the person is only contemplating or already realising entrepreneurship.

Second, the NMEs' expressed beliefs should reflect external factors such as national culture, defined as the values, beliefs and behavioural expectations shared in a society, mediated through its prevalent beliefs and causal reasoning patterns (Bender *et al.*, 2017). In entrepreneurship (Hayton *et al.*, 2002; Thurik and Dejardin, 2012), cultures are often described using Hofstede's framework and findings (Hofstede *et al.*, 2010), according to which the Finnish culture is characterised especially by high individualism and uncertainty avoidance [2]. This should show in the NMEs' beliefs about personal goals (PG) and things that prevent entrepreneurship, such as risks. Here, this could be more pronounced because women entrepreneurs (8 of the NMEs) have been found to be often more risk averse (Shinnar *et al.*, 2012).

Lastly, there are mundane factors that may influence NMEs' beliefs about entrepreneurship and business. For instance, everyday life in a modern economy involves interacting with firms and entrepreneurs as customer or employees. There is also constant media coverage of economic issues and salient cases of firms and entrepreneurship. Persons who contemplate entrepreneurship should be especially receptive to such contents. They can also study the literature and websites that offer rich information about entrepreneurship.

Expectations

The above suggests some tentative conclusions about the NMEs' belief systems, represented below as *aggregated causal maps* (ACM). They provide a perspective and criteria for understanding and assessing the findings.

First, it is probable that the NMEs have coherent belief systems about entrepreneurship and micro business, which can be elicited and operationalised as *individual causal maps* (ICMs). This follows from their cognitive needs and capabilities and the common cognitive drivers. The NMEs face a similar and personally important task situation. This calls for relevant information and for comprehending it by developing corresponding mental representations.

Second, the NMEs' belief systems should overlap to some degree. In addition to the shared situation, several common factors can be assumed to influence their beliefs, e.g. the cultural background and adult persons' common knowledge and rules-of-thumb. The NMEs should also express mainly positive views about entrepreneurship. Because many respondents are women, the risk-aversion aspect can be salient. Lastly, the NMEs lack entrepreneurial experience and formal business education (with one exception) so that their business notions are probably still vague.

The NMEs' belief systems' overlapping will be manifested in the convergence of their active concepts and ICMs and lastly in the ACMs generated by intersecting ICMs to represent the NMEs' typical belief systems. Large and complex ACMs indicate widely shared belief systems; small and simple ACMs more idiosyncratic thinking.

The third issue concerns the relationship of the NMEs' beliefs and TPB/EI variables. As noted above, the NMEs' belief systems can be expected to be consistent with their TPB attitudes and EIs. If so, the ACMs will contain several nodes/concepts and causal beliefs that correspond logically to the NMEs' typical TPB/EI responses but show few contradictory notions.

Context, respondents, method

Research context

The study's context is the *Finnish Entrepreneurship Agencies* (FEA), the country's only nationwide provider of advisory services to micro entrepreneurs. FEA has currently 31 local agencies. In a normal year, FEA serves around 15,000 clients and helps found 7–8,000 firms, roughly half of Finland's early-stage entrepreneurs and a third of all new firms. FEA's advisors evaluate the prospective entrepreneurs' business ideas (BIs) and qualifications and offer no-cost advice whether and how to realise the project. They also provide business contacts and recommendations about start-up allowances or loans. Only the pre-start-up phase is covered currently.

Participants

The study's NME participants [3] are entrepreneurially novice clients of two FEA. Because FEA's client information is confidential, random sampling was not possible. The participants were self-selected. The criterion was that no one had yet begun the counselling process so that the interviews would reflect their pre-counselling thinking. The plan was to expand the sample stage-wise by monitoring the saturation of the respondents' active concepts (below). For logistical reasons, two or four respondents were interviewed during a visit. This led to a larger than necessary final sample ($N = 13$) (see below), consisting of 8 female and 5 male NMEs (Table 1). Their mean age was 44.1 year (SD 10.6) with a range of 27–57 years 6 NMEs

NME	S01	S02	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12	S13	M	SD
Personal goal	5	2	4	4	1	3	4	5	4	5	4	5	4	-	-
BA	4.5	4.0	2.5	5.0	3.0	4.0	5.0	4.0	4.0	5.0	3.5	5.0	2.0	4.0	0.96
SN	2.9	3.0	3.5	5.0	4.0	3.5	5.0	4.5	4.5	4.5	3.5	5.0	3.5	4.0	0.73
PBC	3.1	4.5	3.6	5.0	2.0	3.5	5.0	4.5	4.0	4.5	2.6	5.0	3.1	3.9	0.95
EA mean	3.5	3.8	3.2	5.0	3.0	3.7	5.0	4.3	4.2	4.7	3.2	5.0	2.8	3.9	0.77
E intention	5.0	4.0	3.0	5.0	2.5	4.0	5.0	4.5	4.0	5.0	3.0	5.0	2.0	4.0	1.03

Table 1.
NMEs' PG and TPB/
EI data

Note(s): BA, behavioural attitude; EA, entrepreneurial attitudes; PBC, perceived behavioural control; SN social norms

have a masters or higher university degree, 5 a polytechnic and 2 a trade school degree. This suggests a higher education level compared with typical Finnish NMEs (Suomalainen *et al.*, 2016).

Personal goals and TPB/EI scores

To ascertain the NMEs' entrepreneurial objectives, their PG were inquired. Four were currently employed but wanted to become independent and had a rough idea how (PG 5). Five feared unemployment and intended to employ themselves but did not yet know how (PG 4). Two wished to generate additional income (PG 3). One disliked his present job and was considering self-employment (PG 2). One was exploring entrepreneurship (PG 1).

For an idea of how the NMEs would have responded in an actual TPB/EI study, the NMEs' EA and intentions were measured using a TPB/EI questionnaire with standard Likert-type statements (scale of 1–5; fully disagree ↔ fully agree) (Ajzen, 2006; Iakovleva *et al.*, 2011). Importantly, these data facilitate examining the group's *homogeneity* in entrepreneurial terms, essential for the elicited belief systems' representativeness (see below).

The TPB/EI scores are in Table 1. For the present (heuristic) purposes (Maxwell, 2010), the scores were combined to indicate the NMEs' overall EA. On average, the NMEs' EA ($M = 3.9$, $SD = 0.77$) and EIs ($M = 4.0$, $SD = 1.03$) turned out rather high. The scores also covary ($r = 0.87$, $p = 0.0001$). The findings suggest that the NMEs are a fairly homogeneous group in terms of EA and intentions.

Comparative causal mapping

To reveal and present the NMEs' belief systems, this study uses *comparative causal mapping* (CCM). Underlying CCM is that belief systems are conceptually (see above) networks of causal knowledge/propositions ($A \rightarrow B$, $B \rightarrow C$, etc.) about an issue or a domain. Cause maps' nodes and arrows correspond to and can thus represent the networks. Presently relevant is that CCM facilitates eliciting, comparing and analysing *group-level* belief systems (Carley and Palmquist, 1992; Ifenthaler *et al.*, 2011). In *individual cause maps* (ICMs), a person's causal propositions are combined into a compact view of her/his belief systems. Intersecting a group's ICMs generates aggregated cause maps (ACMs) to represent the group's *shared* belief systems. This is important in fields which study specific actor types' cognitions, e.g. political science (Axelrod, 1976), management and organisation cognition (MOC) (Hodgkinson, 2015; Walsh, 1995) and entrepreneurship (Laukkanen and Tornikoski, 2018; Tremml, 2020). There are different variants of CCM (Laukkanen and Wang, 2015; Laukkanen and Liñán, 2022).

Semi-structured interviewing

The precondition of valid comparison of individual belief systems is uniform data that represent the studied actors' beliefs about research relevant phenomena. Such data must usually be specifically elicited. This study applied on-site semi-structured interviewing (SSI) around two themes: (1) Why do or do not people become entrepreneurs and what follows if the entrepreneur succeeds or fails, and (2) What underlies NMFs' emergence and what are the causes and consequences of NMF success and failure. For uniformity, probing used similar questions and allowed reasonable, roughly equal response times. SSI elicits respondents' readily accessible beliefs and minimises the number of putative, momentarily generated notions. SSI data consist of original causal propositions ($a \rightarrow b$, $b \rightarrow c$, etc.) in natural language, not responses to a predefined instrument. Moreover, by inquiring about causes and consequences, SSI elicits little redundant data for more efficient and reliable data processing.

At the outset, the project was explained and emphasised that no sensitive issues would be addressed and that the key is to hear the respondents' own views, not "book wisdom."

The interviews began by asking about the causes of the first anchor topic (see above). This elicits a *first stratum* of concepts which the respondents recall or infer effortlessly. Next, the process was repeated using the *elicited concepts* as new anchors. The result is a larger *second layer* of original notions that probably lie deeper cognitively. After the causes of the first theme were covered, the interviewing continued by inquiring about the first theme's effects and consequences. The second anchor topic was addressed similarly. The SSIs took, on average, a good hour per respondent ($M = 66.77$ min, $SD = 13.99$). The preparations, background information and the TPB/EI data took roughly the same time.

It may be added that these interviews covered the causes of the first layer causes and the effects of first layer effects. Moreover, because of limited time and to avoid probably speculative, atypical data, second layer probing concentrated on notions assumed to be important (= were noted early or repeatedly) and probably reasonably explainable. For instance, grounds of fears were inquired, those of entrepreneurial personality not. First and second layer notions were considered equal. Examples of the probing questions and of typical first and second level responses are presented in [Appendix](#).

Processing CCM data

SSI data consist of natural causal propositions, i.e. concept pairs where something is asserted to influence something or to be caused by it. There are 924 original concepts, so-called *natural language units* (NLUs) ($M = 71.08$, $SD = 17.07$ per respondent) and 1312 *natural causal units* (relationships) (NCUs) between the NLUs ($M = 100.92$, $SD = 22.58$ per respondent). The data were keyboard entered into CMAP3 [4], a CCM specific Windows application.

Critical in CCM is standardising (coding). It translates and groups the NLUs (in Finnish) into *standard node terms* (in English, SNTs) which represent core phenomena that the NMEs discern. By establishing the NLUs' similarity or difference, standardising facilitates comparing the respondents' beliefs. It also compresses data by removing synonyms, homonyms, and details like redundant attributes. The coding scheme (standard term vocabulary) of this study is intentionally close to the original concepts, which simplifies coding and makes the ACMs more readable. Exceptions to this are some synthetic SNTs that combine functionally related NLUs. For instance, the SNT *E-negative traits/flaws* comprises NLUs/factors like incompetence, laziness, greediness, and so-called "personal" (i.e. alcohol) problems. The coding was reviewed by two outside experts familiar with the method and the context. The agreement of the experts and the initial coding was high (IRR = 99.42%) [5].

The raw and coded data were processed using CMAP3. This produces numerical indicators (Table 2) and data tables containing active SNTs and cause-effect pairs (standard causal units, SCUs), their numbers and incidence. This enables identifying NMEs who "own" given SNTs and SCUs, i.e. had expressed correspondingly coded original propositions, facilitating converting [6] the SCUs shared by a specific threshold number of respondents into the ACMs.

Validity

Validity usually refers to the ability of a method to measure what it should measure. Here the question is: Do the data and lastly the ACMs represent the NMEs' genuine beliefs? This depends first on their sincerity (Axelrod, 1976): Did they say what they think and mean what they said? This can be only inferred from the context. The SSIs took place in neutral surroundings following a standard protocol, allowing roughly equal, limited response times. The addressed issues were non-sensitive and the NMEs had no obvious shared motives to *systematically* hide or fabricate their views. Therefore, the SSI data can be assumed to reflect the NMEs' sincere responses based on their accessible knowledge and normal reasoning tendencies.

Measure	Total	S01	S02	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12	S13	Mean	SD
NLU	924	50	89	51	50	95	96	50	64	75	80	69	75	80	71.08	17.07
NCU	1312	79	131	82	82	107	151	74	91	107	109	106	81	112	100.92	22.58
SNT	63	28	39	25	35	43	41	33	32	37	39	38	37	39	35.85	5.15
SCU	200	46	70	48	53	65	65	48	46	60	66	55	49	54	55.77	8.49
SCU/SNT	–	1.64	1.79	1.92	1.51	1.51	1.59	1.45	1.44	1.62	1.69	1.45	1.32	1.74	1.59	0.17
DENSITY	–	2.36	3.58	2.46	2.71	3.33	3.33	2.46	2.36	3.07	3.38	2.82	2.51	3.48	2.91	0.46
C/D index M	–	0.44	0.51	0.40	0.48	0.52	0.47	0.43	0.45	0.51	0.52	0.51	0.48	0.51	0.48	0.04
C/D index SD	–	0.06	0.07	0.08	0.06	0.10	0.07	0.07	0.06	0.06	0.08	0.06	0.09	0.08	–	–
SNT saturation %	–	49.2%	81.0%	85.7%	92.1%	98.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	–	–
Note(s): C/D, correspondence/distance index; NCU, natural causal unit; SCU, standard causal unit; SNT, standard node term																

Table 2.
NMEs' original and
standardised CCM data

Also coding influences CCM validity: Were the NLUs interpreted correctly as same-denoting with the respective standard concept, its referents, and other NLUs in the SNT category? The goal is acceptable *semantic* validity meaning that the SNTs (ACM nodes) (in English) make sense, and that the NLUs (in Finnish) were consistently interpreted and coded observing the referents and the group's NLUs. As noted above, the review of the coding suggests high validity.

A further validity indicator is the ACMs, which require sufficiently shared ICMs. Because the NMEs had no reason or means to collude to express similar beliefs, the relatively complex ACMs indicate the method's validity, and that shared belief systems exist, but this is asymmetric. ICMs can be valid, but if individual belief systems differ widely, no or very simple ACMs emerge.

Lastly, the validity of entrepreneurship studies – credibility in qualitative terms – is sometimes evaluated expecting instinctively statistical generalisability (Maxwell, 2012), without considering its appropriateness. The question here is not whether the NMEs possess *some* belief systems – this is self-evident – or their generalisability – how common they might be – but more an epistemic and methodological one: Have such actors coherent, *entrepreneurially relevant* beliefs which are important to study and how useful is the SSI-CCM approach? This implies examining the CCM findings and understanding what they should be considering normal human cognition and the context. For such analytic purposes the sample is quite sufficient. A larger one would not produce *essentially* different belief systems as indicated by the early saturation of the SSI data (below).

Findings

Numerical results

Table 2 shows the numbers of the original and standardised concepts and relationships. The NLUs reflect the NMEs' idiosyncratic tendencies to use synonyms or repeat themselves. Standardising removes this impact. The SNT and SCU numbers give an idea of the ICMs. Their size and complexity are indicated by *SCU/SNT* (the average number of causal links per node) and *Density*, calculated as the relationship of actual versus all possible (unidirectional) causal links among the respondent's SNTs. The low mean Density = 2.91 (0.46) is common when distilling belief systems from documentary or interview data (Laukkanen and Wang, 2015).

A key issue here is the *convergence* of the NMEs' belief systems. To measure that, CMAP3 calculates a *C/D index* (correspondence/distance), which shows (in percentage) how far each NME shares SNTs with other NMEs. The present $C/DI\ M = 0.48\ (0.04)$ means that, on average, roughly half of all active SNTs are shared, indicating correspondingly overlapping ICMs and a common core of beliefs. A further indicator is *SNT saturation* (Guest et al., 2020; Nelson et al., 2000). As shown in Table 2, most SNTs (92.1%) emerged by the 4th respondent (S04) and the rest by the 6th (S06). As the causal links follow the SNTs, this too suggests relatively convergent belief systems.

The saturation has two further uses. When studying group-level beliefs, the necessary sample size depends on the group's respective homogeneity. Analysing such studies (Guest et al., 2020) has shown that a surprisingly small number of respondents, usually 6–7, is sufficient for revealing the *typical* thinking of *homogeneous* groups about the focal theme. As noted earlier, the NMEs were found fairly homogeneous in *entrepreneurial* terms, which is presently relevant. The observed saturation suggests that here less than half of the sample ($n = 13$) might have sufficed to reveal the NMEs' shared belief systems. Second, for generating the ACMs by intersecting the ICMs, the saturation enables setting the threshold as the *minimum* total frequency (TF) (number) of NMEs who share an SNT or SCU. For group causal mapping, a point of around 50% has been recommended (Carley, 1997). CMAP3

enables testing different thresholds. A low cut-off point ($TF \geq 5$) generates dense, unreadable ACMs; a high one ($TF \geq 7$) risks omitting probably common beliefs. The ACMs (Figures 2-4) were generated [6] using SNT frequency $TF \geq 6$. This produces coherent, detailed, yet readable ACMs to represent the NMEs' common belief systems. The SCUs in bold occur practically with all NMEs, the others are shared by 8–10 NMEs.

Belief system 1: entrepreneurship

The first ACM (Figure 2) displays the NMEs' core beliefs about entrepreneurship. It contains 22 standard concepts (SNT) and 40 standard relationships (SCU), some reciprocal, a concept appearing as a factor and as an outcome.

As to why someone becomes an entrepreneur, the NMEs explain that first teleologically by positing (perhaps projecting) PG, such as ensuring a job/livelihood, personal independence, self-realisation and better life quality. Some suggest that some (but not they themselves) seek wealth and affluence. When successful, entrepreneurship attains such goals, which is why some goals appear in the ACM also as causes. Second, the NMEs believe that entrepreneurs have a certain personality and specific characteristics and motives, including unique goals or "visions" about doing something significant. Third, entrepreneurship can also be a necessity resulting from job loss or work-life experiences. Fourth, many NMEs note that growing in an entrepreneurial family or a supportive or discouraging local culture can influence positively or negatively. Fifth, the NMEs know the key role of a BI, something one detects or invents or which results from one's educational background, work, networks or plain serendipity. Lastly, many think that entrepreneurship requires some business skills, but their ideas about this seem vague. Some noted the role of public support and counselling.

The NMEs also perceive several factors which hinder realising or even thinking about entrepreneurship. The dominant one is *fear of failure*, which refers to the consequences of failure (below) and the uncertainty about one's capability to launch and run a firm. This is believed to depend on one's personality and attitudes to risk and uncertainty. Further noted deterrents include viewing entrepreneurship as stressful or involving struggles with bureaucracy and taxation.

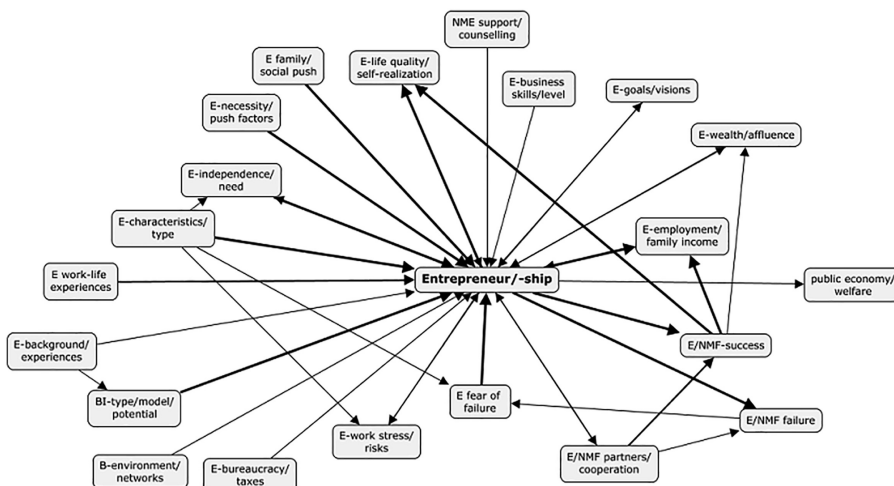


Figure 2.
NMEs' ACM about
entrepreneurship

To all NMEs, the main outcome of entrepreneurship is successful performance of one's own NMF. This is *the* precondition of the above goals, but facilitates also public benefits like creating jobs as some noted. NMF success is also key to personal and family affluence and eventual NMF growth, which depends on one's business skills, but can be unintended, even forced. Overall, the NMEs' growth attitudes seem ambivalent. Some perceive growth as too distant and irrelevant at this stage, some think it is undesirable, leading to more responsibilities and stress.

Belief system 2: NMF success

Figure 3 displays the NMEs' belief systems about *positive* entrepreneurial performance, in practice NMF success and its implications. This ACM contains 30 SNTs and 51 SCUs. It is clearly more the complex that the one about individual entrepreneurship.

Beliefs about what causes NMF success are twofold: First, it calls for an energetic, competent entrepreneur with appropriate characteristics and skills. Second, success depends on the NMF's product or service, which should be based on a sound BI and meet customers' needs. This ensures the support of customers and partner networks and thus turnover/sales, a precondition of success and profitability. Further factors include the market and general demand in economy, active marketing and sales effort, delivery and logistics. The NMEs understand the need of financing and the role of softer factors such as the entrepreneur's and the NMFs' reputation, image and credibility.

The primary consequence of NMF success is secured self-employment, family income and eventually personal wealth/affluence. This explains the emphasis on profitability. Surprisingly, many equate NMF success with growth and hiring, leading to job creation and positive welfare impacts. Firm growth also develops the offerings and one's business skills. However, as noted, the NMEs' growth ideas feel somehow distant, not personally relevant at the moment.

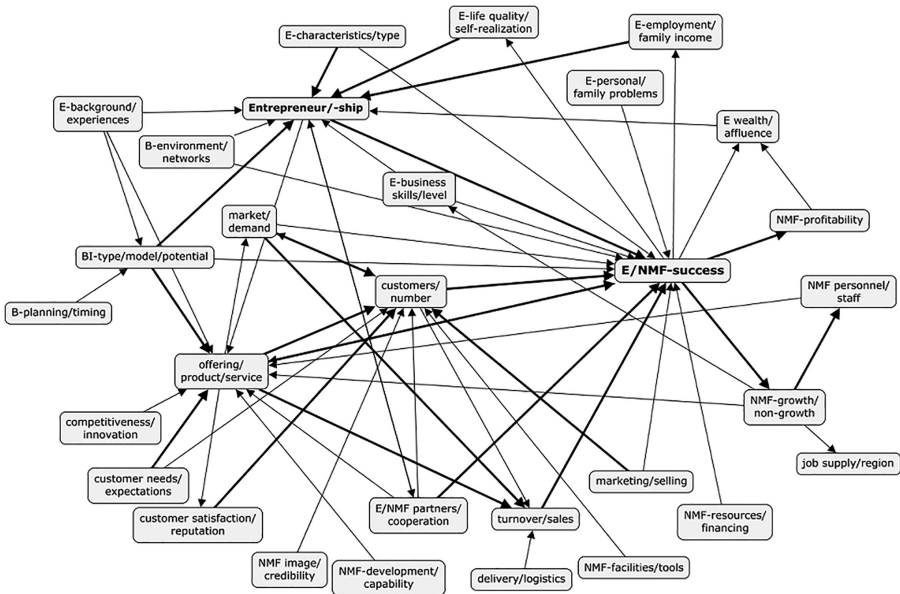


Figure 3.
NMEs' ACM about
E/NMF success

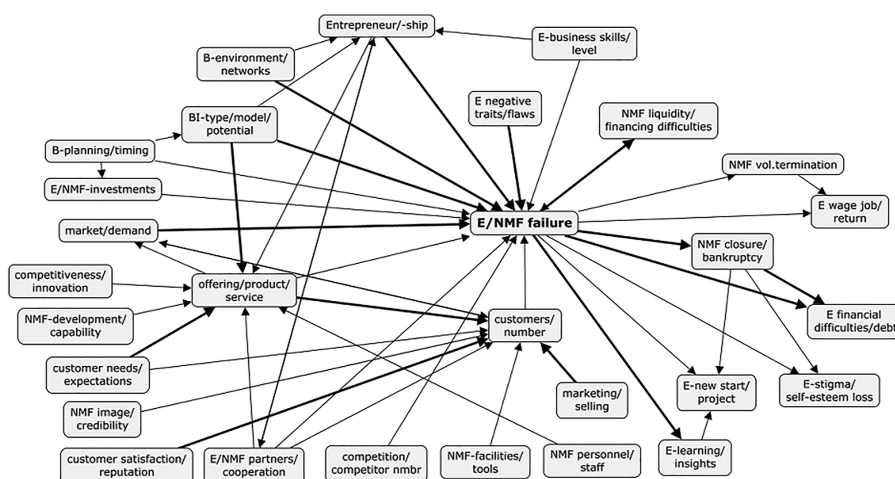


Figure 4.
NMEs' ACM about
E/NMF failure

Belief system 3: NMF failure

The third ACM (Figure 4) contains 29 SNTs and 52 SCUs. It displays beliefs about the causes and outcomes of NMF failure. The high density of this ACM, in particular the detailed explanations of failure, suggests that this is a major concern to the NMEs.

The factors noted as causes of NMF failure are symmetrical to those of E/NMF success but are now negative or insufficient. Thus, failure can result from entrepreneur-related issues or unforeseen events which are beyond one's influence. The former includes errors of planning and timing, which lead to a weak business model, unwise investments, and unattractive offerings and poor service, meaning fewer customers. A specific factor most emphasise is entrepreneurs' personal flaws or negative traits. The second category includes declining market demand and partner issues, e.g. losing outsourcing contracts, sudden intense competition, and sudden changes of business conditions like barriers to customer traffic or new technologies which antique previous methods. The NMEs also understand social media's impact on image and reputation.

Notably, most NMEs associate failure exclusively with bankruptcy and ensuing financial difficulties and problems of social stigmatisation and loss of self-esteem. Only three NMEs noted the much more common unforced termination. Interestingly, most NMEs appear euphoric: A failure can happen but not to one, but should it happen, one can return to a wage-earning job or start anew having learned much. Perhaps this indicates avoiding cognitive dissonance between intentions and perceived risks by downplaying the risks at this stage.

Discussion

Main observations

A first conclusion is that the NMEs have distinct belief systems about the focal issues. This is shown by the coherent and relatively complex ICMs that lead to the rather detailed ACMs. Second, the NMEs' overlapping SNT bases and the ACMs indicate that the belief systems have a common core and share a significant number of concepts and causal relationships. This is as expected and consistent with the theoretical premise that social actors need (and will) develop internal models of their external situation, and that in similar situations similar belief systems will emerge. This was driven by the NMEs' situation as prospective micro entrepreneurs and common formative factors.

In terms of content, the NMEs' belief systems emphasise, as expected, the positive outcomes and realisability of entrepreneurship, reflecting relatively educated persons' common knowledge and ability to conceive plausible teleological, personality-based and environmental explanations. The individualistic goals and the detailed notions about failure may mirror the Finnish culture's characteristic individualism and uncertainty avoidance. The sample's high share of women may overemphasise the risk-aversion aspect.

The NMEs' belief systems suggest common-sense views of entrepreneurship and business, but a still undeveloped grasp of business conditions, practices and terminology. This is shown by the simplistic accounting and financial concepts, unawareness of key agents like banks and authorities, and naïve ideas about failure. The NMEs could have obtained much more detailed information from internet sources and printed manuals. It seems that few found this necessary at this stage.

Belief systems and the TPB/EI model

The starting point was the TPB/EI premise that actors' EA, intentions and ultimately behaviour are determined by their respective beliefs. It was concluded that this is a theoretically useful metaphor, not a causal mechanism. CCM/SSI data of the NMEs' beliefs and the TPB/EI data represent the same cognitive basis, consisting of their retained knowledge/beliefs and of what they construct in their mind momentarily. These are latent processes that can be only inferred of overt responses, not directly observed and shown. Consequently, the plausibility of the beliefs-TPB/EI relationship premise depends on whether there is a *logical* agreement between the actors' TPB/EI responses and their expressed beliefs. Projected to this case, the above implies that because the NMEs show, on average, highly positive TPB dispositions and EIs (Table 1), their entrepreneurship beliefs should be confident and constructive, emphasising entrepreneurship's positive outcomes and practical personal feasibility, not its negative aspects or difficulties. Overall, the NMEs' belief systems, represented by the ACMs, seem to support this.

Assessing the correspondence requires mentally simulating the NMEs' revealed thought patterns and surmising how persons who possess such belief systems would probably think and respond to a TPB/EI questionnaire. On the one hand, the NMEs expressed high levels of behavioural attitudes (BA, $M = 4.0$, SD 0.96), awareness of social norms (SN, $M = 4.0$, SD 0.73) and perceived behavioural control (PBC $M = 3.9$, SD 0.95). On the other hand, the ACMs show that they discern key phenomena like entrepreneurship, job, income, quality of life, demand, marketing, customers and sales, financing etc. Furthermore, they believe, e.g. that becoming an entrepreneur creates a job which brings the income one and one's family need, or that having a BI and a vehicle like a small firm enables realising that. Considering the NMEs' evident conceptual base and causal beliefs, it seems logical that also their responses to the BA, PBC and EI statements were generally positive.

A different issue is the relationship of the NMEs' expressed SN and their beliefs about social influences. In the TPB model, SN's formal weight equals BA and PBC, suggesting correspondingly detailed belief systems. However, in this case, the social aspect appears somehow subdued. To be sure, social mechanisms appear in the entrepreneurship ACM (Figure 2), indicating an awareness of the social context and its relevance (e.g. *E family/social push* → *E/ship*). Social aspects are also manifested in the goals and motives of entrepreneurship and in the beliefs about the consequences of failure like social stigma or family difficulties. Further research should clarify whether this concerns only the present or Finnish NMEs or whether the beliefs underpinning BA and PBC are inherently more dominant, suggesting modifying the TPB/EI model. Perhaps this is a time issue so that social criteria, e.g. spouse or family cooperation, become critical only after personal commitment and ensuring the project's realisability.

Methodological notions

The study demonstrates that the CCM/SSI approach can reveal entrepreneurial actors' beliefs in a detailed, useful and technically accessible manner. The results are presented as causal maps that give a holistic, systemic view of the belief systems. This facilitates understanding the cognitive base of the actors' behaviours and approximately simulating, in the mind's eye, their domain related reasoning. CCM provides also heuristically useful quantitative measures (Maxwell, 2010). Compared with the conceivable main alternative, ethnographic-style interviewing (Grégoire and Lambert, 2015; Johnstone, 2007), CCM/SSI is relatively fast and elicits little redundant data. This supports data's economic acquisition and transparent, systematic and efficient processing and facilitates larger (but not large, *n*) samples for better representativeness and counteracting biases and errors. A downside is the intensive, preferably on-site data elicitation and the need to use computerised, but not complicated techniques such as the CMAP3 (Laukkanen and Wang, 2015).

An important general issue concerns the appropriate depth when probing cognitions. In this study and TPB studies the data represent respondents' "readily accessible" cognitive level (Ajzen, 2006, p. 8). However, it is argued (Krueger, 2007, p. 123ff) that we should "...explore at deeper and deeper levels", because EIs reflect "deeply seated beliefs and belief structures."

It is evident that deep (core) beliefs can be important. They may underpin critical characteristics such as self-efficacy (Zhao *et al.*, 2005) or the so-called Dark Triad (Hmieleski and Lerner, 2016). In principle, they can also be revealed by intensive deep interviewing like in cognitive therapy (Wenzel, 2012). However, it does not follow that deep beliefs are the only or even the most relevant aspect of *entrepreneurial* cognitions. In practice, entrepreneurship necessarily takes place in some *specific* operative and strategic environment. Therefore, entrepreneurs like key managers (Gary and Wood, 2011; Walsh, 1995) *must* develop and maintain *situational belief systems* that are adequately isomorphic with the context and enable comprehending it and communicating with its actors. Whilst firm birth or expansion may reflect entrepreneurs' deep beliefs, deep beliefs are too unspecific to facilitate strategic and everyday operative management. Therefore, it seems essential and arguably also often more relevant to study entrepreneurs' "intermediate beliefs"; the practical knowledge they have and use to operate and communicate in the environment. Also, their performance depends significantly on that. Importantly, as shown here, this cognitive level is knowable using accessible methods based on oral or written data.

Limitations

The study's main limitation is sample *asymmetry*. For revealing the belief systems behind TPB attitudes and EIs, it would have been useful to include also "E-negative" respondents. This was not possible because FEA cannot disclose client information.

As discussed earlier, in conventional nomothetic terms, the sample could be criticised for being too small. This (statistical generalisability), however, is presently not relevant. As discussed above, the study's sample is sufficient for assessing the TPB/EI linkage and the CCM/SSI approach.

A more pertinent observation is that the study could not inquire about the origins or grounds of the beliefs, or about how certain or important the NMEs considered them. Doing that, however, requires specialised studies, and cannot be combined with an effort to elicit entire *belief systems*.

Further studies

There are at least two directions. One involves exploring different aspects of the *belief-TPB nexus*. First, as noted, it would be informative to study also persons with less positive views

about entrepreneurship, e.g. by replicating this study with respondents from both continuum ends of a TPB/EI study. Second, the belief systems behind *specific* TPB dimensions need to be explored in detail. For instance, the beliefs behind SN appeared less salient in this study but that does not make them less important. It would rather seem that there are “power beliefs”, concerning, e.g. personal fulfilment or family pressure, which can be particularly influential. If so, this suggests studying specific belief characteristics, such as their subjective certainty or weight. Fourth, new research is needed to illuminate the origins of entrepreneurial beliefs and the role of context in belief formation. A start could involve replicating this study in other contexts and/or with different actor types such as serial or so-called start-up entrepreneurs.

The second direction implies general research of entrepreneurial actors’ knowledge/beliefs in terms of their content, accuracy, origins, etc. As noted, whilst common in MOC, this is still perplexingly rare in entrepreneurship. Could one reason be misconceptions that ECR is exclusively about *how* entrepreneurs think, involving complicated experimental and clinical methods (Baron and Ward, 2004; Grégoire and Lambert, 2015)? Arguably, it is equally important to understand *what* entrepreneurs and other entrepreneurial actors know and think (or ignore), how those beliefs are formed and what positive or harmful impacts they have. This is doable using accessible methods like CCM based on interview, documentary or structured data (Laukkanen and Wang, 2015). Important prototypes of such research include comparing the thought patterns of different entrepreneur types like solo/team or first-time/serial entrepreneurs and longitudinal studies of belief system change resulting from critical events or interventions like starting a firm or entrepreneurship education programmes. CCM also supports using dummy respondents to represent ideal or template belief systems for comparison.

Implications for entrepreneurship development

Assuming FEA’s small business advisors (SBAs) were informed of this study’s findings, they might conclude that NMEs are well-informed, receptive clients. They might also learn that NMEs have fears and erroneous beliefs, unknown to and unattended by the SBAs, because they are not expressed as culturally “unentrepreneurial” and/or because of other, more “important” concrete things like business plans (Laukkanen and Liñán, 2022). If so, this should raise concerns.

For instance, NMEs’ overly pessimistic notions about failure can cause needless abandoning of projects or, if too naïve and sanguine, proceeding carelessly or too aggressively. By addressing such notions and by preparing Plan B’s, SBAs can counteract hidden fears or overconfidence, fostering realistic decision-making (Cacciotti *et al.*, 2016; Invernizzi *et al.*, 2017). In addition, the often risk-averse SBAs may recommend more ambitious projects, knowing that the NMEs can handle the eventual difficulties.

The above hypothetical case suggests that it could be useful for entrepreneurship developers and educators to know better what the clients or students think but do not customarily express. High EIs, shown by becoming an SBA client or a TPB/EI study, are only a good start. Developers could employ CCM or corresponding cognitive methods to diagnose initial beliefs, set knowledge targets and track the impact of their efforts. When focused on key issues, this is not too complicated, but shows individual progress, pinpoints issues and provides evidence of development efforts for public decision-makers.

Conclusion

The study’s starting point was that EI research, informed by Ajzen’s TPB, has not studied entrepreneurial actors’ beliefs although the beliefs are posited to determine their attitudes and EIs. It was argued that understanding better the cognitive underpinnings of EIs is theoretically important and provides new, cognitive tools for developing entrepreneurship.

The study finds that the NMEs have coherent, relatively uniform but still undeveloped belief systems about individual entrepreneurship and micro business. The first, methodologically important implication is that belief systems could/can be revealed systematically and validly using relatively uncomplicated methods (CCM/SSI). Second, the belief systems were found plausible in the context and also consistent with theory-based expectations about knowledge formation and reasoning. Actors from similar social and cultural contexts and in similar task situations develop broadly uniform beliefs for a cognitive grip of their situations, here concerning the feasibility and implications of entrepreneurship. This is relevant for future studies of entrepreneurial beliefs.

The TPB premise that beliefs determine attitudes and EIs can be considered a theoretically useful metaphor, not a directly observable relationship. It can be examined by comparing the overt manifestations of actors' cognitions and their consistency. In this case, the NMEs' elicited belief systems and expressed TPB attitudes and EIs were found logically compatible, supporting the TPB premise. A limitation of the study was that "entrepreneurship-negative" respondents or the strength or origins of specific beliefs could not be examined.

The study has implications for entrepreneurship research and development practice. It demonstrates an accessible cognitive method, CCM, and suggests potential research of the contents, formation and impact of entrepreneurial knowledge, separately or combined with TPB/EI studies. In entrepreneurship development and education, cognitive methods can reveal problematic, ordinarily bypassed beliefs and support setting of knowledge targets and tracking of progress.

Notes

1. Reviews by Liñán and Fayolle (2015) and Donaldson (2019) noted nearly 600 EI-related papers for 2004–2018 alone. In spite of critical views (Sniehotta *et al.*, 2014), the popularity of TPB/EI research continues, new EI studies emerging practically every week.
2. <https://www.hofstede-insights.com/country-comparison/finland/> (accessed May 2022)
3. More accurately, the participants are *potential* NMEs. GEM studies define NMEs as persons who are setting up a business they will own or co-own. This applied probably to 2–4 of the study's 13 NMEs.
4. The CMAP3 installation package and the support documentation can be downloaded free at: <https://www3.uef.fi/fi/web/cmap3> (accessed March, 2022). IHMC CmapTools for generating the graphic cause maps is downloadable free at: <https://cmap.ihmc.us/cmaptools/> (accessed May, 2022).
5. IRR calculation (<http://dfreelon.org/utis/recalfront/recal3/>, accessed May, 2022) yielded a high average percentage agreement but low chance-corrected IRR measures (e.g. Fleiss' Kappa = 0.0029). This is typical when judges have few disagreements about large numbers of coding decisions (Feng, 2015). Percent IRR is recommended in cases where judges are well-informed (McHugh, 2012).
6. CMAP3 enables generating ICMs or ACMs, observing the defined TF threshold, from the entire SCU base or from SCU subsets called Domain Maps which comprise a seed concept (e.g. NMF-success), its causes and effects and/or their causes and/or effects. CMAP3 converts the SCU sets into cxi-files which are imported to IHMC CmapTools and converted and edited into graphic ICMs or ACMs.

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Appendix

Semi-structured interviewing

The respondents were asked first: "Why does someone become an entrepreneur?" Typical elicited causes noted were: *seeking independence, more income and self-fulfilment*, detecting a *BI*, and being an *entrepreneurial type*. These first level notions were used to elicit a second layer of NLUs which explain the first level NLUs, revealing further causal beliefs. For example, some responded that *workplace experiences* and *freedom to act* are causes of seeking *independence* and *self-fulfilment*, *BI* emerging of factors like *entrepreneur's background* and *customer needs*. Symmetrically, the respondents were asked: "What hinders becoming an entrepreneur?" Examples of these causes were: *prejudices, fear, income uncertainty, bureaucracy* and *personality*. When inquired further for second layer NLUs, e.g. *fears* were explained by *financial difficulties, personality* and *uncertainty*. After the causes, the respondents were inquired about the consequences of entrepreneurship: "What follows when someone becomes an entrepreneur?" and "What follows if the entrepreneur fails?" Typical first layer consequences now were, respectively: *independence* and *a job*, and *a failure of the firm* and *bankruptcy*, and second level NLUs, respectively, *self-fulfilment* and *financial difficulties*. When probing for the first or second layer NLUs, the respondents were asked *once* if there is something else. If nothing occurred to them, probing was continued to the next logical phase.

Corresponding author

Mauri Laukkanen can be contacted at: mauri.laukkanen@uef.fi