

Research Article

Compensatory Network Capital: A Bourdieusian Conversion Model of Health Literacy

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We develop Compensatory Network Capital (CNC) as a sociological framework for understanding how social networks translate potential social support into actual capability within healthcare. Building on Bourdieu's capital theory and Sen's capability approach, we specify social conversion as a meso–micro process that links institutional rules, social network resources, and concrete health actions. Rather than proposing a competing construct, CNC refines social capital, Distributed Health Literacy, and related models by identifying four tie-level mechanisms: Activation, Function-specific Help, Recognition, and Substitution (A–F–R–S) that condition whether support becomes action at the point of need. Drawing on qualitative interviews and two small pilot surveys, we employ abductive analysis to illustrate how these mechanisms can be operationalised through event-level indicators (e.g., booking, attendance, follow-up) and to distinguish between positive, partial, and failed conversions, including harmful or misdirecting network influence. We argue that CNC offers a theoretically grounded and measurable account of when and for whom networks compensate for limited individual health literacy, and how organisational recognition of informal helpers shapes these outcomes. The model contributes to relational public health by identifying key points of intersection among people, social ties, and institutions.

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Introduction

We introduce a sociological conversion model that explains when and how social networks enable concrete action in healthcare. The model builds on Bourdieu's theory of capital^[1] and Sen's capability framework^[2], refining rather than replacing Distributed Health Literacy (DHL)^[3] and social capital^[4].

Despite extensive research on both social capital and health literacy, we still lack a clear understanding of how social relationships *convert* potential support into concrete health-actions. While meta-reviews show that social capital is consistently associated with better mental and physical health outcomes, the mechanisms remain diffuse and under-theorised^[5]. Likewise, although health literacy research increasingly recognises the role of social context^{[6][7]}, the definitional and measurement landscape remains fragmented, and network-based models are scarce^[8]. Moreover, recent work on DHL^[3] emphasises that while capacities may be spread through social ties, there is currently no systematic conceptual model of how such distribution operates in practice^[9]. This article proposes to fill that gap by presenting a relational conversion framework via A-F-R-S mechanisms that traces how resources and social ties turn into realised capabilities and health actions through social networks

We aim to specify how social ties operate as relational conversion factors that turn available resources and individual health literacy into practical capability at the point of need^[10]. Previous studies have mapped contextual conversion factors; however, population-level operationalisations remain scarce and fragmented^{[10][11][12]}. We respond by offering a framework that identifies when network relations convert potential social support into realised capability and how these moments can be observed. For example, a daughter logs into the patient portal and books a time that fits work and transport, while a neighbour explains a hospital letter and checks the medication list. In both cases, available support becomes action at the right moment.

However, it is essential to emphasise that CNC is not proposed as a competing construct to existing frameworks, but rather as a meso–micro level specification of the social conversion step that they leave underspecified. Figure 1 illustrates the transformation from endowments to capabilities and functionings, utilising CNC mechanisms as a social conversion process. The solid arrows indicate pathways where help becomes action; dashed lines mark potential negative network influences (e.g., misinformation, pressure, discouragement, lack of recognition). Detailed mechanisms and measures follow in the Theory section.

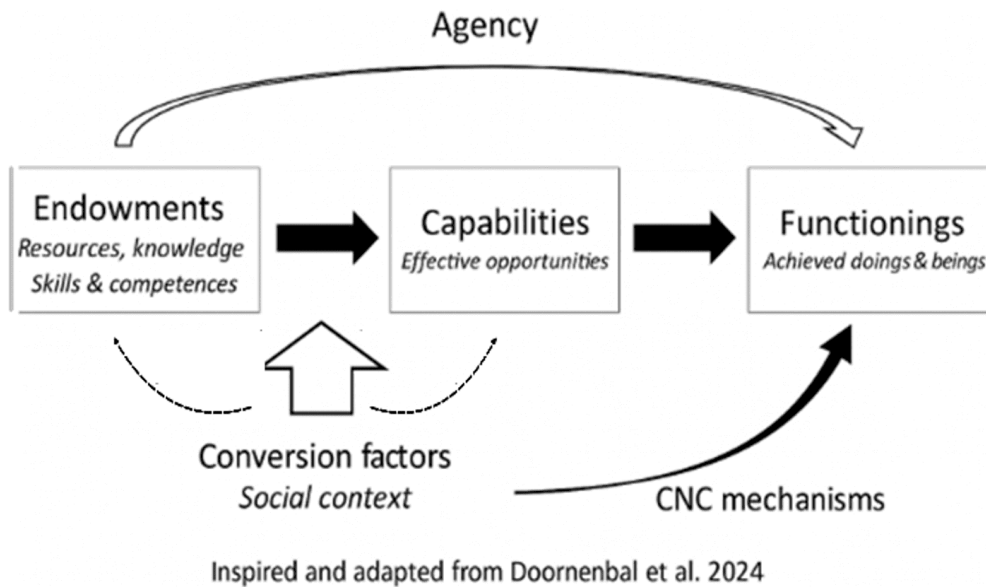


Figure 1. From resources to action: Where CNC operates

We thus align with a relational view of public health that treats social ties as mechanisms that enable, channel, or impede access and adherence to health services. Health inequalities persist across various settings, and conventional models often treat social context as a background factor rather than as a mechanism^{[8][13]}. A network perspective shows how the structure and quality of ties shape access to care, navigation, and adherence through informational, instrumental, and motivational pathways^{[8][14]}. Among individuals with multimorbidity, low health literacy is common and is often associated with socioeconomic position^{[15][16]}. Supportive relationships can strengthen adherence, resilience, and continuity of care; however, social support is not automatically mobilised or effective in practice^{[17][18][19]}. Perceived social support and functional social support are not identical, and networks can exist without being activated or recognised by services^[20]. These observations point to a missing step between resources and outcomes that we conceptualise as social conversion.

Much research measures resources or outcomes, but not the intermediate steps where capability is translated into action. Exceptions include capability-oriented instruments in health promotion, the Context Sensitive Positive Health Questionnaire, and analyses of health literacy conversion factors in survey data^{[10][11][12]}. We extend this agenda by identifying a small set of relational mechanisms that explain when resources embedded in ties become actionable within institutional fields. We developed the

model abductively from mixed-method research and aligned it with Bourdieu's capital logic and Sen's capability thinking to maintain both theoretical and empirical traction^{[21][22]}.

We track specific tasks, such as whether network input resulted in a completed booking, an attended appointment, medical management, or a resolved information need. This event focus allows for measurements that can be applied across designs. Researchers can attach conversion indicators to surveys and link them to register outcomes, while services can use the same indicators in audits of access and continuity. The approach also clarifies equity mechanisms. Not everyone has ties that can translate social support into action, and organisational rules often limit recognition of informal helpers. By focusing on conversion rather than on generic resources, we can separate general social support from the specific processes that enhance capability, and we can show when and for whom conversion fails^{[23][24][25][26][9]}.

As we build on DHL and Community Health Literacy (CHL), we move beyond individual skills to shared competencies and organisational responsiveness^{[31][27][28][29][30][31]}. In these traditions, family members, peers, and community assets serve as mediators of health literacy. We specify when such shared literacy becomes action. Encouragement and general care can, as forms of social support, improve well-being; yet many tasks continue to stall unless social ties provide task-matched assistance, are recognised by organisations, or can act on a person's behalf.

At the same time, network processes are not uniformly positive. Ties may misinform, constrain, or stigmatise, which can undermine navigation and decision-making^{[32][33][34][35]}. A sociological account of health literacy must therefore include both supportive and obstructive mechanisms, as well as the organisational rules that shape them.

Existing practice models already suggest the presence of these mechanisms. Link workers, volunteer navigators, and social prescribing programmes operate as relational intermediaries that help turn latent social support into action when rules allow it^{[36][37][38]}. We use these examples to motivate a quantitative, measurable account of social conversion that complements individual health literacy and distinguishes itself from general social capital and generic social support.

This leads us to the following research questions:

1. How does social support from social ties turn help into action rather than remain latent?
2. How can we observe and measure these conversion processes so they are distinct from general social support and individual health literacy?

We first present the analytical scope and empirical grounding of the study, before elaborating on the CNC framework as a theoretical synthesis.

Methods

An abductive theory-building design

We employed an abductive, iterative design in which theory development and empirical exploration informed each other in successive stages. Two small surveys provided preliminary indicators of relational health literacy, while qualitative interviews refined and contextualised the emerging CNC mechanisms. See Table 1.

We first state the nominal and operational definitions of CNC, then detail measures via A–F–R–S indicators, data sources, and analyses. Full items, scoring rules, and diagnostics are provided in Appendix C, and ethics and data management are discussed at the end of the section.

Nominal definition of CNC

CNC refers to a health-specific subcategory of social capital that complements individual health literacy by capturing how a person's immediate social network provides social support, translates it, and channels it into decisions, practical actions, and participation in everyday healthcare situations. It treats distributed health literacy as a relational conversion mechanism that can be quantified through task-focused episodes (e.g., did social support lead to action, yes/no, and to what extent?).

Operational definition

CNC is realised in specific health care episodes when four mechanisms are present:

Activation: Deliberately involving someone in a health-related task through 1) self-activation: Asking for help or 2) accepting proactive social support.

Functional specificity: The social support is task-matched (information, guidance, or practical help)

Field recognition: The helper holds relevant status or system know-how that is recognised in the health setting

Substitution: The helper directly compensates for an individual limitation (e.g., co-booking, attending, translating, form completion)

For full compensation to occur, all four mechanisms must be present. If any are missing, the likelihood of conversion decreases. In practice, social ties often provide partial compensation, engaging some but not all mechanisms^{[11][39]}.

These mechanisms were initially provisional and refined abductively through iterations between pilot surveys and interviews. They now serve as a working specification to be validated in Phase 2. Event-level outcomes serve as proximal indicators of capability, encompassing actions such as portal registration, appointment booking, initial attendance, and follow-up completion. These increasingly involve digital interfaces, such as logging into patient portals, accessing test results, or using secure messaging tasks that may require proxy social support for individuals with limited digital literacy.

Analytic scope and empirical grounding

This study forms part of a broader effort to develop CNC as a complementary dimension to existing health literacy (HL) frameworks, such as the HLS-EU-Q16^{[40][30]} and the HLQ^[41]. The pilot's primary aim was instrumental: To test and refine brief survey items that capture relational aspects of health literacy competence, including trust, encouragement, and access to knowledgeable ties.

We conducted the small-scale SM pilot in February 2025 among the general population (N = 130; 65 valid responses). Items were designed as proxies for HL-related domains, such as understanding advice and navigating information, and intended to illustrate how social relations enable or constrain comprehension, motivation, and activation in everyday health contexts.

The secondary, smaller survey was conducted in March 2025 via a closed Facebook group for people living with type 2 diabetes and at least one other chronic condition (N = 65; many partial responses). This dataset was used descriptively to illustrate general patterns and, more importantly, to recruit participants for follow-up telephone interviews. We obtained administrator approval in advance. Participation was anonymous and voluntary, and multimorbidity was confirmed prior to entry.

Due to the limited sample size and item-level nonresponse, only the SM dataset was used for exploratory factor analysis and the illustrative cluster typology (see Appendix B). All quantitative results are treated as non-inferential and theory-building, serving primarily to scaffold the conceptual development of CNC.

Our analytic approach thus combines descriptive mapping, exploratory pattern recognition, and abductive thematic analysis^{[21][42]}. We used descriptive statistics to summarise HL-related items and CNC

indicators, including the number of trusted helpers, types of social support accessed, perceived compensation, and overall network accessibility.

To clarify the abductive and theory-building design of this study, Table 1 summarises the *sequential phases* through which the CNC conceptual framework was developed. The process combined empirical observation and theoretical reasoning in iterative cycles, moving from sensitising concepts and early pilot insights toward refined theoretical specification. Each phase thus represents a step in the analytical translation from initial empirical anomalies to the formulation of the CNC framework and its four mechanisms (A-F-R-S).

Phases	Activity	Analytic Move	Theoretical Outcome
1. Sensitising phase	Review of DHL, social capital, capability literature; initial interviews	Identification of the “conversion gap” between support and action	Preliminary conceptualisation of CNC mechanisms (A-F-R-S)
2. Exploratory mapping	Pilot survey (n=130) + Facebook pilot (n=65)	Descriptive and pattern recognition (factor/clustering)	Empirical grounding of indicators; refinement of definitions
3. Iterative abductive synthesis	Cross-comparison of survey patterns and interview vignettes	Iterative reasoning between anomalies and theory ^[21]	Consolidation of four relational mechanisms and event-level logic
4. Theoretical integration	Linking findings to Bourdieu + Sen + HL frameworks	Theorisation of CNC as a social conversion model	Alignment with the capability approach and sociological capital logic
5. Specification for validation (Phase 2)	Development of measurement propositions (P1–P4)	Translation into operational hypotheses	Framework ready for psychometric and event-linked testing

Table 1. Abductive Phases in Developing the CNC Framework

Pilot survey questionnaire

The SM pilot instrument consisted of 28 items across seven thematic domains. We grouped items to reflect both standard health literacy (HL) dimensions and network-based support functions. Selected items were adapted from the HLS-EU-Q16^{[40][30]} to establish a baseline for individual HL capabilities.

The survey covered the following areas/themes. See Appendix A for a complete description of the questions and response options:

1. Sociodemographic Background
2. Individual Health literacy and Self-management
3. Access to and Activation of Social Networks
4. Practical, Informational, and Motivational Support
5. Unsolicited and Spontaneous Support
6. Recognition, Trust, and Shared Norms
7. Substitution and Change over Time
8. Barriers and Support Constraints
9. Negative or Ambivalent Support
10. Community and Policy Perspective

This structure enabled a broad and nuanced mapping of how social, relational, and structural factors influence HL-related behaviours. Each item was designed to probe one or more mechanisms of CNC, either directly (e.g., activation, substitution) or indirectly (e.g., trust, encouragement, network configuration).

Operationalisation of CNC mechanisms

Patterns emerging from the SM survey items and accompanying interview vignettes converged abductively on a core insight: Network social support enables health-related action only when it is actively mobilised, matched to the task, recognised within the health field, and, when necessary, substitutes for individual limitations.

This led to the formalisation of four CNC mechanisms; each aligned with provisional survey indicators:

Activation (A). Whether social support is deliberately sought

Q21: "How often do you ask someone to help you understand your doctor's advice?" (1–5: Never–Very often)

Functional specificity (F). Whether social support is suited to the task

Q17: "What type of social support do you most often receive from your network regarding health?" (Options: Emotional / Practical / Information–guidance)

Field recognition (R). Whether the tie holds recognised competence in the health domain

Q14: "How many trusted people can you ask health questions?" (None / 1 / 2 / 3 / 4+)

Substitution (S). Whether the tie acts on behalf of the individual

Q25: "How often does someone book appointments or contact services on your behalf?" (1–5: Never–Very often)

Additional items assessed extended network skills ("friends of friends"), unsolicited advice, and negative influences, to social support discriminant validity (vs. generic social support) and face validity for functional coverage. While the pilot primarily captured F and R via survey items, the A and S dimensions were inductively elaborated through qualitative interviews^[22]. Respondents completed an ego-network grid, listing up to five helpers and reporting their roles (information, navigation, practical social support), recognition in the health system, and substitution capability. From this, we derived indices for coverage, recognition, and substitution, and analytically distinguished availability from activation (see ^[43]).

Scoring and summary indices

CNC was operationalised as four subscales (A–F–R–S), each scored on a 1–5 scale. For each subscale, a "gate" item flagged the mechanism as "not met" if the response was zero or missing.

CNC index: Mean score across the four subscales; binary flags indicate unmet A–F–R–S mechanisms.

Function coverage index: Proportion of core functions (information, navigation, practical) reliably covered via recognised ties, defined as ≥ 3 on both function and recognition items.

Both tie presence and activation were recorded, and data were stratified by age, education, and HL score.

Data management and ethics

Participation was voluntary and anonymous. The survey took 10–15 minutes to complete, and only essential data were collected. Follow-up interviews were conducted on an opt-in basis, and all

participants provided informed consent. All transcripts and notes were stored in accordance with GDPR. The study complied with institutional guidelines for non-interventional research.

Exploratory heuristic clustering

Unsupervised clustering was conducted on complete cases using four composite variables:

1. HL: Ease of understanding professional advice
2. Education: Self-reported level
3. Network competence: Number of trusted health-information ties
4. Network strength: Frequency of encouragement received

All variables were standardised. While silhouette analysis indicated an optimal solution of $k = 2$ and the gap statistic suggested $k = 1$, both the elbow method and theoretical interpretability supported a three-cluster solution:

1. Smaller or less competent networks
2. Higher education but weaker networks
3. Higher HL and stronger, trusted networks

Given partial CNC coverage and a limited sample size, these clusters should be considered only heuristic and theory-generating. Further diagnostics and sensitivity analyses are presented in Appendix B.

Interview participants

Twelve adults (aged 18 and above) with multimorbidity participated in the pilot interviews. Eight in-home interviews were recruited in collaboration with municipal health centre staff in three Danish cities (Svendborg, Nordfyn, and Vejle); four telephone interviews followed the survey among Facebook respondents who had consented to recontact. Maximum variation sampling^[44] was employed to ensure heterogeneity in terms of gender, living situation, education/work history, and network size. Interviews lasted 30–60 minutes, were audio-recorded, transcribed verbatim, and pseudonymised. The semi-structured interviews^[45] explored themes as: Daily self-management, difficulties navigating health information, and help-seeking behaviour, including reluctance, misrecognition, or misaligned social support.

Vignettes from the semi-structured interviews^[46] were used to probe the conversion conditions of CNC and to inform both item phrasing and the framework. Selected vignettes are presented in the Theory

section to illustrate failed (e.g., Activation without Recognition) and successful conversions.

Theoretical and conceptual frame

The Capability Approach^{[47][48]} offers a framework for understanding well-being not merely as the possession of resources, but as the absolute freedom to achieve valued ways of being and doing. Functionings refer to these realised states, such as being healthy, well-nourished, or educated, while capabilities denote the genuine opportunities people have to attain them. As Sen^[47] emphasises, the distinction between "elementary" and "complex" functionings is context-dependent and must be established empirically.

Capabilities depend not only on available resources but on people's ability to convert them into action, shaped by personal, social, and environmental conversion factors^{[49][50][51]}. Such factors, ranging from skills, social networks, and recognition to institutional accessibility, determine whether resources translate into actual well-being.

Unequal conversion capabilities thus lead to unequal capabilities, even among those with comparable resources^[11]. In contrast to utilitarian perspectives, which assume that access to material and informational goods directly improves outcomes, the Capability Approach foregrounds the conditions that enable or constrain their use. It thereby offers a powerful lens for understanding how inequalities in context, rather than individual deficits alone, shape health capabilities^[10].

Following Sen, we treat functionings as realised 'doings' and 'beings' and capabilities as the genuine opportunities to achieve them. Allardt's^{[52][53]} concepts of having, loving, and being specify what is at stake; in our case, CNC concerns the step that moves opportunities into action within health services. We therefore use the capability lens only to anchor CNC's conversion focus rather than to reclassify outcomes.

Building on Bourdieu's theory of capital^{[54][1]}, we conceptualise health literacy (HL) as a form of cultural capital^[55], encompassing not only formal education and information-processing skills but also health-related values, self-perceptions, and the ability to navigate in institutional contexts. This broader sociocultural framing aligns with Abel's^{[56][55]}, Abel and Fröhlich^[39], and Rüegg & Abel^[11] conceptualisation of HL as a conversion resource and resonates with Samerski's^[7] critique of dominant models that treat patients as autonomous agents, divorced from their social embedding.

Health behaviour must therefore be seen as structured by class-based life chances^{[57][58]}, shaped by the interplay of capital forms, not merely by individual preferences or information^{[1][59][60][61]}. Health literacy, in this view, reflects embodied cultural capital dispositions and practical know-how formed through socialisation, which interacts with objectified resources (e.g., health technologies) and institutionalised forms (e.g., credentials), thereby contributing to the reproduction of health inequalities^{[39][62]}.

Within Bourdieu's field logic, doxa determines what is accepted as legitimate knowledge and action^{[54][1]}, while habitus orients how individuals perceive illness, seek help, and decide whom to trust^{[1][63]}. Symbolic capital, in turn, confers socially recognised authority, amplifying the credibility and impact of a person's health advice^{[64][65][66]}.

This perspective aligns with a resource-based view of social capital, which emphasises not only the presence of ties but also the quality, embedded resources, and situational activation of those ties^{[67][68]}. Position generator studies indicate that individuals with access to higher-status or professional contacts possess broader, actionable resources^[69], particularly in navigating complex systems such as healthcare.

In health-related information work, individuals with more substantial network capital are more likely to access information from diverse sources, including professionals, media, and peers, and to convert that information into action. These advantages are most pronounced when network members possess high HL themselves or have professional health roles^{[68][70]}. Thus, network competence includes not only trust and availability, but also the embedded expertise and recognition value of one's ties.

At the community or meso level, social capital has long been associated with access, adherence, and health outcomes, although unevenly, depending on whether one's ties connect to recognised institutional gateways^{[71][5]}. The Network Episode Model^{[61][72]} demonstrates that the transition from symptom appraisal to formal care is influenced not only by individual readiness but also by trusted intermediaries who interpret, legitimise, and facilitate transitions across care settings. CNC builds on this evidence.

Adjacent frameworks and what CNC adds

	Main Focus	Analytical Level	Power & Recognition	Outcome Logic	Mechanism
Social Capital ^{[4][1]}	Social ties, trust, norms, and resources embedded in relationships	Community, population, field	Putnam: Collective trust (implicit); Bourdieu: Field-dependent recognition	Social cohesion, civic engagement, potential health effects	Putnam: Bonding/bridging ties; Bourdieu: capital conversion via field position
Distributed Health Literacy ^[3]	Health literacy as <i>a shared</i> relational asset across ties	Individual-in-network	Limited focus on power dynamics	Shared understanding improves HL outcomes	Mediation of information and care by close ties
Community Health Literacy ^{[30][31]}	Organisational and community responsiveness to HL needs	Community & meso-systems	Responsiveness replaces recognition logic	Equity through inclusive systems and navigation	System design and institutional interfaces
Cultural Health Capital ^[73]	Interactional styles and symbolic resources in clinical encounters	Individual-in-encounter	Symbolic capital mediates clinical outcomes	Unequal communication outcomes by class/capital	Habitus and symbolic legitimacy
Compensatory Network Capital ^[22]	Conversion of social ties into task-specific, recognised social support	Individual-meso and social tie-level dyads	Requires tie-level recognition within health field	Realised action when A-F-R-S conditions are met (partly;full).	Activation, Function-specific help, Recognition, Substitution

Table 2. Comparison with related concepts

Table 2 locates CNC among adjacent frameworks. Whereas social capital, DHL, CHL, and CHC specify resources, sharing, organisational responsiveness, or symbolic legitimacy, they are less explicit about the conditions under which such resources are jointly mobilised and converted into concrete action. CNC attempts to bridge this gap by introducing the social tie-level conversion step, which determines whether help translates into action under real-world service rules.

Relational mechanisms that enable or hinder action

In^[22], qualitative accounts underscored the role of recognition: *"My brother is known at the clinic, and he sent the same request. I got an appointment the next day."* This illustrates how symbolic capital and institutional familiarity shape outcomes. A 67-year-old woman with multiple chronic conditions was initially denied an appointment until her neighbour's daughter, an employee at the clinic, intervened. Symbolic capital^{[54][74][1]} may thus be accessed vicariously through social ties, compensating for an individual's limited health literacy.

CNC formalises these dynamics as a network-based conversion mechanism. Substitution (S) whereby a helper performs a critical health task serves as the behavioural signature of conversion, distinguishing CNC from generic social support. In the interviews^[22], substitution often occurred in unremarkable but decisive acts. Henrik (60), for instance, explained: *"The computer terrifies me; I cannot even type my emails,"* while his niece logged onto the patient portal on his behalf. This compensatory act, performed at the point of need, illustrates the conversion of social capital into realised capability.

Activation refers to the deliberate mobilisation of network ties for a health-related task. However, even competent contacts may remain untapped due to stigma or norms of self-reliance. As Dennis (52) remarked: *"I do not ask friends; I do not want to look weak."* This avoidance renders social support latent. Although Dennis reads medical messages, he hesitates to call or ask for clarification (F minimal), lacks an advocate (R not met), and experiences rare substitution. CNC terms frame his situation as low conversion (mainly F fragments), highlighting how unmet needs suppress action.

Functional specificity refers to the alignment between social support and the task. Karen (64) shared: *"My husband texts me every morning to remind me about my inhaler."* While effective for adherence, this leaves other functions unmet, showing that partial coverage is insufficient for complete conversion. Maria (58), by contrast, shared niche expertise within a closed diabetes forum: *"No one else knows these groups' codes."*

Her role illustrates how activation and recognition co-determine who enables access, especially in digital contexts, although it also can lead to misinformation^[75].

Measuring conversion at the event-levels

CNC targets concrete health tasks, such as booking, attending, or interpreting care, which are observable and measurable events. Three boundary conditions shape this conversion:

1. *Over-professionalisation*: Reliance solely on professionals for recognition (R) may ensure legitimacy but limits sustainability when Activation (A) and Function (F) are absent from close ties (cf. ^[73]).
2. *Organisational responsiveness*: In high-CHL settings, lower thresholds of recognition may suffice for routine tasks, though complex needs still require R^{[30][31]}.
3. *Digital intermediaries*: Recognition can be instantiated via clearly marked digital roles (e.g., triage inboxes in patient portals). Without explicit labelling, recognition may fail despite A and F.

Descriptive cluster profiles

Our k-means cluster analysis (Table 3) yielded three descriptive profiles. The cluster profiles illustrate compensatory patterns in which strong networks (high CNC) may offset limited health literacy (HL), and vice versa. These profiles identify when resources convert (A–F–R–S jointly) or remain latent, aligning with capital structure theory^{[1][2]}. Appendix E presents six theoretical profiles combining individual HL with CNC (3×3)

Cluster	Label	Key Traits	A–F–R–S Pattern	Proximal Outcome Signal
Cluster A	Double Disadvantage	Low individual capabilities/ Low CNC	A±, F-, R-, S-	Lower booking/attendance
Cluster B	Self-reliant	High individual capabilities/ Low CNC	A+, F±, R-, S-	Missed follow-up
Cluster C	Double Advantage	High individual capabilities / High CNC	A+, F+, R±, S±	More timely booking

Table 3. Cluster Profiles from SM Pilot Survey (n=65)

Note: Based on k-means cluster analysis. See supplementary material in Appendix B. The cluster profiles illustrate compensatory patterns in which strong networks (high CNC) may offset limited health literacy (HL), and vice versa.

These patterns show that low HL does not uniformly predict disadvantage conversion but instead hinges on how well social support is activated and recognised. From this, we derive four propositions for further validation:

- P1 (Field recognition effect): Recognised messengers produce higher odds of action than unrecognised messengers.
- P2 (Functional convertibility): CNC predicts event-level action beyond network size and individual HL measures.
- P3 (Substitution threshold): Outcomes improve when social support substitutes directly at the point of need.
- P4 (Activation constraint): In otherwise similar networks, lack of activation suppresses conversion; engineered activation enhances it.

Discussion

The present findings align with empirical evidence demonstrating how relational processes influence whether potential social resources are translated into health-related actions.

The ethnographic study *Seeing the Invisible*^[76] provides perhaps the most transparent window into these mechanisms. Following student volunteers who accompanied socially vulnerable citizens to healthcare appointments, the study vividly exposes how access can be blocked by seemingly mundane obstacles, such as anxiety, linguistic uncertainty, difficulty navigating transportation or facilities, or simply a lack of someone to accompany them.

Volunteers observed that many participants deferred to staff, overlooked essential steps, or failed to attend appointments altogether. One student mentioned that many vulnerable citizens would not make it across the doorstep if not accompanied, *“Listing barriers, they noted that many users struggled to even make it out of the house... several would not attend without accompaniment...”*

^[76].

At the same time, another student reflected that equity is not just about a healthcare system being available to all, but about adapting possibilities to a person's resources.

[76]. Through this ethnographic lens, the invisible work of conversion becomes visible. The students' presence transformed the encounter: Their recognised role legitimised them in the eyes of professionals and enabled them to substitute temporarily for the patient in tasks such as asking questions, clarifying instructions, or managing logistics. These moments illustrate CNC's activation, recognition, and substitution mechanisms in real time. Ethnography thus grounds the theoretical model in the social realities of access, revealing that without such relational scaffolding, health literacy alone cannot ensure capability.

Building on this qualitative grounding, the evaluation by Valentin et al.[36] demonstrates that structured bridge-building can translate these conversion insights into measurable impact. In the Social Health Bridge-Building Programme, student volunteers systematically provided accompaniment and light-touch navigation support before, during, and after clinical encounters. Participating citizens reported improved appointment adherence, greater trust in providers, and enhanced ability to interpret health information.

Student accounts confirmed that activation typically occurred through small but precisely timed interventions such as reminders, reassurance, or clarification at the moment of contact. These findings highlight CNC's function-specific help mechanism: the support must not only be available but also appropriately matched to the task and context.

Quantitative evidence from Doornenbal[10] supports this argument by operationalising the conversion context in a survey format. Their Context-sensitive Positive Health Questionnaire (CPHQ) integrates health literacy with contextual domains, including *social support*, *exclusion*, *environmental safety*, and *financial resources*. Items like "In the past month, I had someone available to help me with tasks I did not understand" and "I felt excluded from social networks when trying to access health services" capture both enabling and constraining dimensions of conversion. Regression analyses showed that these contextual factors predicted health functioning beyond individual literacy, empirically demonstrating that capability depends on the interplay of relational and structural conditions.

For CNC, this provides a clear roadmap for second-phase measurement. Short event-level indicators can track when activation, recognition, substitution, or even negative network influence (e.g., misinformation or discouragement) occurs. Such data would allow CNC to be tested alongside instruments like the HLQ or HLS-EU-Q16 while preserving its theoretical focus on *conversion mechanisms* rather than static resources. In Phase 2, CNC could be validated as a second-order construct comprising

the four interrelated dimensions. Each dimension will be measured through, e.g., four survey items (16 total) and a brief ego-network grid that captures tie functions, recognition, and substitution potential.

Negative network effects

Our findings also align with research indicating that social networks can undermine, rather than support, effective illness management. Daily diary^[34] and survey studies demonstrate that negative exchanges, criticism, blame, unwanted advice, or overt conflict are less frequent than positive ones but are more strongly associated with psychological distress and poorer emotional health^[35]. In Newsom and colleagues' national study of older adults, negative exchanges were linked to both reduced well-being and increased psychological distress, whereas positive exchanges primarily predicted well-being. Appraisal processes partly mediated this asymmetry, suggesting that negative encounters are more salient and more challenging to discount^[35].

Qualitative research on low-income families further reveals how obligations to reciprocate can transform "support" into a burden. Offer's analysis of relational dynamics under conditions of poverty highlights how limited resources and strong norms of mutual help can generate strain, leading to withdrawal and exclusion from personal networks when people can no longer "keep up" with expected exchanges^[77].

Adebahr's synthesis of "negative ties" research similarly characterises complicated relationships as recurring, tense interactions that are hard to exit (e.g. kin ties). It documents their contribution to inequalities in physical and mental health and health-related behaviours, with such ties more prevalent and more consequential in socioeconomically disadvantaged groups^[32]. Read alongside our participants' accounts of feeling judged, controlled, or emotionally drained by close others, this literature underlines that network involvement can add to treatment burden and psychosocial strain. For CNC, this implies that the framework must explicitly accommodate not only latent or inactivated resources, but also adverse network effects, where activated ties systematically fail to expand, and may even constrain people's health-related capabilities.

In the sections that follow, we translate this into practical screens and research designs that can be used in conjunction with established instruments.

In clinical settings, a brief CNC mini-screen (4-6 items) can complement existing HL instruments (e.g., HLQ, HLS-EU) by identifying whether a task-specific, recognised proxy is available or can be engaged. Rather than locating barriers in "low HL" individuals, CNC aligns with health-literate organisation

models that aim to simplify navigation, clarify roles, and permit proxy action through labelled permissions^{[23][31]}. Still, many patients rely on informal connections to navigate bureaucratic barriers. Sørensen et al.^[26] rightly stress the need for system-level redesign, but CNC demonstrates how everyday social infrastructures also sustain access to resources. Where formal systems fall short, relational substitution may bridge gaps between individual and system levels.

While professionals such as link-workers or student navigators^[36] provide structured assistance, many people already receive high-quality social support from family, neighbours, or friends, often informally^{[61][39]}.

The challenge is therefore not merely to deploy more professionals, but to recognise and collaborate with competent lay helpers, especially those already embedded in people's lives. This calls for policies that extend beyond patient education to include light-touch training, more precise role recognition mechanisms, and interface design that enables trusted others to act when needed^{[23][31]}. By systematising these relational infrastructures, health systems and municipalities can leverage existing social capital and target resources more efficiently^{[67][71]}.

Future studies, particularly in high-data settings such as Denmark, can test CNC's validity at scale by linking surveys to register-based event outcomes^[43]. Such studies could help identify which conversion factors matter most, for whom, and in which institutional contexts. Over time, this could form the basis for equity-driven interventions that reduce access gaps not only by building individual health literacy, but by enabling the relational capabilities that matter most at the point of need^{[2][55][26]}. To reach more structurally excluded groups, future designs must also include purposive outreach and oversampling strategies to capture the lived experiences of those least connected to formal care and conventional support systems.

Future studies may combine CNC indicators with validated instruments, such as the HLQ^[41] or HLS-EU-Q^[30], to enable integrated analyses of individual and relational capabilities. In this view, CNC acts not as a replacement but as an extension bridging the micro-level distribution of support with meso-level conditions for its activation and effectiveness.

Limitations

Our preliminary indicators require psychometric testing, including measurement invariance across groups and contexts^{[30][25]}. Future work should combine cognitive interviewing with larger surveys and

event-linked outcomes to examine reliability, predictive validity, and how negative network^[32] influences interactions with conversion under different organisational rules^{[23][38]}.

Conclusion

CNC provides a sociologically grounded framework for understanding how social support can be translated into a practical capability in everyday health management. Building on Bourdieu's theory of capital and Sen's capability approach, CNC draws attention to the structural and relational conditions under which support becomes meaningful and usable. It shifts the focus from the mere presence of social ties to the actual conversion of these ties into health-relevant resources, contingent on activation, functional specificity, recognition, and substitution.

By specifying these mechanisms, CNC moves beyond static views of social capital as a generalised or latent asset and instead treats social support as a dynamic and situational resource that must be both available and actionable at the point of need. This perspective helps explain not only why some individuals benefit from social support, but also why others do not, and how social network inequalities shape health capabilities in ways that existing models may overlook.

As both a research framework and a practical tool, CNC has the potential to inform the design and evaluation of more equitable health and social interventions. Future applications could include CNC-informed surveys, linkage with administrative data, and qualitative typologies to better capture the lived experience of those navigating multimorbidity with limited personal and network resources. Importantly, CNC highlights that reducing health inequities requires not only strengthening individual competencies but also enabling the relational infrastructures that make these competencies usable in practice.

Crucially, CNC draws attention to a somewhat neglected meso-level in public health. While macro-level reforms (e.g., system navigation, accessible communication) and individual-level interventions (e.g., health literacy training) remain essential, they risk overlooking the informal, often invisible resources embedded in everyday relationships. These resources, which are supportive for some but absent or inaccessible for others, represent a vital yet underutilised lever for enabling equitable self-management in real-world conditions.

Statements and Declarations

Authors Contribution

Carsten Kronborg Bak is the developer of CNC and has written the full article. Co-authors have participated in revision and critical comments to the article.

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