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- 1 Using Computer Assisted Qualitative Data Analysis Software (CAQDAS; NVivo) to assist in the
- 2 complex process of realist theory generation, refinement and testing
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25

## 26 Abstract

27 There have been several calls for more transparency in realist methods, particularly in the complex 28 process of programme theory development and refinement. This paper will describe the way in which 29 Computer Assisted Qualitative Data Analysis Software, specifically, NUD\*IST Vivo (NVivo), was used 30 to build and refine programme theories (using literature and interview data) in a realist evaluation. 31 This article presents the evolving and complex process of coding several data sources to nodes and 32 child nodes, whilst writing 'attached memos' to highlight the process of theory generation. In this 33 project, NVivo helped create an explicitly documented and evidenced audit trail of the process of 34 programme theory refinement, answering to calls for further transparency in realist anal. RAMESES I 35 and II have provided a platform to improve transparency in reporting realist research, by developing 36 consensus and evidence-based reporting guidelines. We propose that the use of NVivo in realist 37 approaches can help structure the iterative and by nature 'messy' process of generating, refining and 38 testing complex programme theories when drawing on multiple data sources simultaneously. This 39 effectively creates a structured track record of the analytical process, which increases its rigour and 40 transparency in the analysis process.

41 Keywords: Qualitative; NVivo; CAQDAS; Realist; Evaluation; Theory

## 42 Background

43 Computer-assisted qualitative data analysis software (CAQDAS) has been used as an aid to data 44 analysis in qualitative research in several methodological fields, including grounded theory (Bringer et 45 al., 2004), interpretative phenomenological analysis (Clare et al., 2008) and realist meta theory 46 (Bergin, 2011). NVivo, a form of CAQDAS, "supports code-based inquiry, searching, and theorizing 47 combined with ability to annotate and edit documents" (Richards, 1999). Realist researchers have 48 found using the programme challenging but valuable in advancing the robustness of qualitative 49 research (Bergin, 2011).

50 Realist evaluation is used to understand and evaluate complex social programmes (Pawson and Tilley, 51 1997). It focuses on 'what works, for who, why and in which circumstances' using Context, Mechanism 52 and Outcome Configurations (CMOC) as opposed to asking only whether or not an intervention 53 'works'. To operationalise this, explanatory statements are developed and tested, resulting in a 54 refined programme theory. A key analytical tool in realist evaluation is the CMOC, conveying that 55 intervention resources are introduced into contexts in a way that enhances a change in reasoning; this 56 alters the behaviour of participants, which leads to measurable or observable outcomes (Dalkin et al., 57 2015; Pawson and Tilley 1997).

58 Realist evaluation and realist programme theory building is an iterative process, which often demands 59 engagement with numerous data sources. This can make the often convoluted and iterative process 60 of developing, testing and refining complex programme theory difficult. There have also been calls for 61 greater transparency in realist methods (Welch and Tricco, 2016), in regard to how programme 62 theories have been developed and refined, sometimes using various data sources. Literature also 63 suggests that researchers find realist methods difficult to operationalise (Dalkin et al., 2015; Shaw et 64 al., 2018; Feather, 2018). Techniques to maximise the transparency of the realist analytical process 65 have included systematically dated recordings of decision making for a whole project in a MS Word 66 document (Lhussier et al., 2015) the use of distinct MS Word documents for each individual

67 programme theory (Dalkin et al., 2018b, Dalkin et al., 2016), and use of google docs (Turner et al., 2018). Whilst these permitted a systematic recording of the analytical process undertaken in 68 69 developing and refining theories, they presented key challenges with regards to working across 70 different datasets, and integrating data in this analytical process trail. This meant that although there 71 was a clear effort to increase transparency of an inherently iterative process, the way in which this 72 could be utilised beyond the team, and the way in which various analytical decisions could be 73 rationalised was limited. The RAMESES II reporting guidelines for realist evaluations is one way in 74 which the processes surrounding realist research have been illuminated. The guidelines ensure realist 75 evaluations are reported in sufficient detail, in the context of existing evidence, and with a rating of 76 strength of evidence for main findings that will greatly assist users of the evaluations (Welch and 77 Tricco, 2016, Wong et al., 2016). While these standards have been invaluable in ensuring 78 methodological clarity and comprehensiveness in the reporting of realist projects, less material is 79 currently available which gives an insight into the processes which lie behind orderly, published 80 accounts of realist evaluation. It can be difficult to evidence the analytical micro processes which lead 81 to a clearly formulated programme theory in realist research, especially given the nature of the 82 complex intervention under study. Welsh (2002, pg.1) states that "Computer assisted qualitative data 83 analysis software (CAQDAS) has been seen as aiding the researcher in his or her search for an accurate 84 and transparent picture of the data whilst also providing an audit of the data analysis process as a 85 whole—something which has often been missing in accounts of qualitative research." Therefore, we propose that the use of CAQDAS (such as NVivo) could be a tool in the realist evaluators box, which 86 87 aids them in the inherent complex approach to theory generation; in doing so this may also enhance 88 transparency.

89 The paper adds to a scant evidence base on the use of NVivo in realist evaluation (Dalkin and Forster 90 2015; Douglas et al., 2010, Marchal et al., 2010, Maluka et al., 2011; Gilmore et al., 2019). Bergin 91 (2011) has carried out a meta-realist theory analysis; this approach and analysis process was 92 somewhat different to what we describe below, drawing on realist meta-theory (Bhaskar, 1989) as 93 opposed to realist evaluation (Pawson and Tilley, 1997). This meant that a thematic analysis was 94 utilised as opposed to a realist logic of analysis driven by programme theory. In this paper, we 95 therefore aim to demonstrate the use of CAQDAS, specifically NVIVO, in the organisation and 96 analysis of a realist evaluation.

#### 97 Method

98 This article will provide a case study of how CAQDAS, specifically NVivo, was used to aid in the complex 99 and messy process of theory generation, refinement and testing in NVivo, using an example of a recent 100 realist evaluation exploring the health impact of welfare advice. The full details of the study are 101 provided elsewhere (Dalkin et al., 2018; Forster et al., 2016). In brief, a realist evaluation of an 102 intensive advice service (provided by Citizens Advice) in the North East of England explored the impact 103 advice had on health, using a stress and wellbeing lens. Quantitative findings indicated that stress was 104 significantly decreased and wellbeing increased after interaction with the service. This was explained 105 through qualitative data, highlighting that advice worked through increasing individual capabilities, 106 fostering trust, and acting as a buffer between state organisations and the client.

- 107 The following section will focus on the process of using NVivo as opposed to presenting the findings
- 108 of the Citizens' Advice study. The aim of the article is not to explore the depths of NVivo and all of its
- 109 functions, but to provide a case study of how it can be operationalised in a realist analytical process.

# 110 Findings

- 111 As highlighted in the RAMESES II guidelines (Wong et al., 2016), every realist evaluation presents itself
- differently and the focus here is therefore not on standardisation of NVivo use. As with the method
- 113 itself, use of NVivo requires flexibility and should be tailored according to the specific programme and
- 114 focus of the research.

# **Development of initial programme theories as nodes**

116 The research process began with 'hunches' about how the Citizens' Advice projects might have a 117 health impact for clients. Hunches can be defined as the evaluators' 'informed guesswork' about how the programme works (RAMESES II Project, 2017); these initial hunches were formed from the 118 evaluators' informal knowledge of the programme. They constituted rough, unformatted and 119 120 unedited ideas about how the programme worked and sometimes took the form of 'if-then' 121 statements. For each hunch we made a node. Nodes are central to working with NVivo; they function 122 to gather related material in one place so that emerging patterns and ideas can be identified. Nodes 123 are usually created as 'themes' or 'cases' such as people or organizations. In the project described 124 here, nodes were initially used as 'hunches' or ideas around how the programme worked. Each node 125 was given a title, such as "Shaming the unhealthy". We then created a 'linked memo' for each node 126 which allowed us to provide a more detailed description of the thinking behind our initial hunch. At 127 this point it became clear that coding by C, M and O would lead to disjointed themes and therefore a 128 decision was made to code using a programme theory lens, which is outlined here. Thus, each node 129 was developed from an 'initial hunch' into an initial programme theory at this point, through theory 130 development sessions conducted as a full research team. This was based on our understanding of the 131 advice service, from a general literature scope carried out for the project's funding bid and protocol.

- 132 Following from this we conducted realist interviews with Citizens Advice (CA) staff. Using Manzano's 133 (2016) three-stage realist interview process, this constituted the theory-gleaning phase. The focus of 134 these interviews was to understand generally what works for clients receiving advice, specifically for 135 whom, in which circumstances and why. Example questions are provided in Table 1. These interviews 136 aimed to develop our initial hunches into well formulated Initial Programme Theories (IPT), which 137 could be formally tested through further empirical data. The interviews were transcribed and then 138 imported into NVivo. Interview data could then be coded to the IPT nodes and where information was 139 new (not covered by an existing IPT node) a theory/node could be created. For example, the IPTs did 140 not detail that CAB can provide brief health interventions; this was shared during interviews with 141 Citizens Advice project leads and therefore was developed as an additional IPT. This process helped 142 us to develop and refine our IPTs, exploring the different context, mechanism and outcome 143 configurations associated with the CAB projects.
- We then revisited the literature in more detail to find supporting and disconfirming evidence for our
  IPTs; realist evaluation and realist programme theory building is an iterative process (Pawson, 2006).
  In order to keep various primary and secondary data sources coded under the same nodes but stored
  in distinct folder so as to facilitate data retrieval, we used the N-Vivo function of child nodes. Child

- 148 nodes allow you to create 'sub themes'. Therefore each node (for example "Basic Needs") now had
- 149 two child nodes: 'Literature' and 'Interview' (Figure 1). For each overall node, we recoded our
- 150 interview data from CA staff into the child node, '1<sup>st</sup> interview with CA staff'. We then selected the
- 151 'aggregate coding from child nodes' function which meant that the main node now stored information
- 152 from both interviews and literature. This gave us the option of examining data from all or only select
- 153 sources, for each theory node.
- 154 INSERT FIGURE 1

# 155 Initial Programme Theory refinement with CA staff

156 We then interviewed the CA staff a second time; this constituted the theory refinement stage (Manzano, 2016). The initial programme theories were shared in interviews with staff, who were given 157 158 the opportunity to comment upon and suggest additions to these theories. This was done in the form of general questions, developed from the IPTs, as opposed to presenting the theories in CMO form 159 160 (Manzano, 2016). These interviews were transcribed and imported into NVivo, before being analysed 161 and coded to IPT nodes where appropriate. The theory was then refined, based on the data from this 162 second set of interviews with staff. The theory refinement process was conducted as a team, with the 163 discussions and rationale for adjustments to theories recorded and dated in linked memos associated 164 with each node (Figure 2). This meant that the full team's thinking was captured and reasons for changing the programme theory were explicitly noted. Where the IPT changed, additions were 165 166 inserted using coloured font and deletions using a strikethrough. This ensured it was explicit to all the 167 team how the programme theory has evolved throughout the project.

168 INSERT FIGURES 2 & 3

# 169 **Programme theory 'testing'**

The analysis of the interviews with Citizens Advice staff led to 17 IPT (Figure3). Interviews with 22 clients were conducted to test the initial programme theories. The interviews were transcribed and imported into NVivo, in the same way as for staff interviews. These were then coded to the appropriate node, under the child note of 'client interviews' (Figure 4).

174 INSERT FIGURE 4

Often, it was felt that analysis led to coding under a programme theory that didn't quite 'fit'. At this point, a team member would call a full team meeting for programme theory refinement. Thus, whilst coding of the transcripts was done by independent team members, programme theory refinement was carried out by the team as a whole using the main node which encapsulated data from CA staff interviews, client interviews and the literature.

180 The full team (5 people) met bimonthly (or more regularly if necessary) to discuss analysis and refine 181 the programme theories. After 4 interviews had been carried out with clients, the team felt that the 182 programme theories required refinement. As noted above, this was highlighted due to issues in coding 183 to the nodes we currently had; team members were finding their coding did not 'fit' with the current 184 nodes (programme theory) suggesting refinement was required. As individual team members had analysed interviews, they came to this meeting with evidence-based and theory-driven ideas as to 185 186 how the programme theory should be refined. A process of debate then ensued, anchored by reading 187 data extracts together as a team, in order to refine current or create new programme theories which capture and explain all data. The process was therefore two fold; individual team members coding
 single interviews to pre-existing nodes; then whole team reviewing the nodes and refining their
 formulation in view of the data, utilising retroduction. Retroduction refers to the identification of
 hidden causal forces that lie behind identified patterns, recognising the insufficiency of both inductive
 and deductive logic (Jagosh, 2020).

193 PTs were often 'voided' when unsubstantiated by data. However, in order to ensure they were not 194 forgotten, they were not deleted and remained within the NVivo file. Should relevant data later 195 emerge they could then be 'unvoided'. The authors acknowledge that the term 'void' does not 196 represent the realist premise of theory refinement, where no theories are 'thrown out' of the analysis 197 (Pawson and Tilley, 1997). A better term for these theories could be 'unsubstantiated at that time', as 198 these theories were never discounted, and were sometimes merged with other theories, but 199 regardless the data was never lost. In the spirit of transparency and as we show the inner workings of 200 our NVivo file, the term 'voided' has been used throughout.

Often as a process of refining programme theories, the names of the actual theory would evolve. For
 example, 'Basic Needs' changed to 'stop gap' to more efficiently capture the essence of the
 programme theory. The final list of nine programme theories is shown in NVivo in Figure 5.

204 INSERT FIGURE 5

205

## 206 **Overall explanatory framework**

An overall explanatory framework to understand how advice impacted on CA clients stress and wellbeing was developed from the programme theories, informed by substantive theory. Figure 6 displays the final list of programme theories, and whether they were 'voided' or contributed to the overall explanatory endeavour.

- Specific substantive theories were identified through both structured searches and the project team'sown theoretical knowledge base.
- 213 INSERT FIGURE 6

#### 214 Discussion

215 Realist evaluation and realist programme theory building is an iterative process and often demands 216 engagement with numerous data sources. This paper provides consideration of how we conduct 217 theory-driven realist research, how theories start as hunches, which are then refined using evidence. 218 It also highlights how these theories are the focus of discussion and disputation amongst scholars, 219 where the theories are refined, judged, sifted, winnowed and tentatively unsubstantiated. Use of 220 NVivo allowed us to capture these theory generation discussions, whilst thinking out loud and being 221 immersed in the data in a shared way. This allowed us to better share and synthesise perspectives 222 from the data as a group, rather than in isolation. It also meant that no reflection was lost, ambiguous 223 or unable to be challenged and refined in the future.

The paper illuminates this important and vaguely understood aspect of realist analysis. The use of 224 225 NVivo could aid in the pragmatics of engaging in the 'messy' and iterative process of realist sense 226 making from multiple data sources, thereby enhancing rigour as an audit trail of the analytical process 227 is documented, and transparency as no step in the process of analysis was lost to this documenting 228 endeavour. Whilst neither we, nor realist researchers, aim or want to find a method to audit 229 qualitative research, we propose that NVivo can aid in the complex process of programme theory 230 development, refinement and testing, whilst increasing transparency; even if this transparency is of 231 use only to the internal evaluation team. Use of NVivo allows 'tracking' of initial through to tested 232 programme theories, with the use of linked memos and different data sources (e.g. literature, client 233 interviews, staff interviews) utilising child nodes. The number of programme theories can be tracked, 234 and no programme theories are forgotten in the multifaceted and iterative analysis due to the process 235 of 'voiding'. This not only provides clarity whilst carrying out complex realist analysis, but also when 236 writing for publication or presenting interim findings.

#### 237 Overcoming issues of transparency

As a project team, we found that use of NVivo allowed for essential retroduction and group production of refined programme theories, drawing on all of the various expertise in the team. This was time consuming, as opposed to progressing analysis in isolation; but it carried more explanatory potential drawing on the knowledge of all team members. This issue isn't solely applicable to NVivo, but to all group projects using realist analysis. However, we feel that NVivo aided in the group process by tracking all aspects of programme theory refinement using linked memos, thus enhancing transparency. It also caveated for unintended occurrences, for example, researcher illness.

245 Importantly, the technology did not decrease the amount of time needed to read, conceptualize, and 246 analyse data (Bringer, 2004). Data analysis in realist research, involving the identification of underlying 247 generative causal outcome patterns, is iterative and time consuming (Robert et al., 2017, Punton et 248 al., 2016). Using NVivo did not necessarily reduce analysis time, but did make writing up findings 249 easier, due to clarity in justification of findings. It provided an anchor for team 'brainstorming' around 250 the development and testing of programme theories, in a way that was very pragmatic and grounded 251 in the data. It meant that the whole team could engage in data analysis, whether they had physically 252 collected some, none or all the data. It thus provided a space for team members to challenge each 253 other's interpretation in a productive disputatious space, where everything was recorded 254 systematically. We do not wish to encourage an instructive or 'one size fits all' approach to the 255 activities of theory generation; as with realist approaches in general, the theory generation, 256 refinement and testing documentation processes should be tailored to the individual project. This 257 should be thought through, and decisions about technology thoroughly considered, alongside other 258 creative means of theory generation. The process of using N-Vivo meant that there was a thorough 259 sense-checking procedure in place, adhering to the systematic and thorough application of the 260 principles of qualitative research, which added rigour to the analysis (Barbour, 2001). The approach 261 provides quality assurance that is more complex than checklist 'technical fixes', as described by 262 Barbour (2001).

#### 263 Engaging with multiple data sources

A further benefit of using NVivo was the ability to upload both primary and secondary data which can be used for coding. This allows literature to be considered as data, which is consistent with a realist approach. This therefore facilitates prior theoretical ideas, concepts, models or propositions to be used in relation to theoretical sampling and theory generation (Layder, 1998). Furthermore, as the blending of evaluation and synthesis continues (e.g. (Maidment et al., 2017, Cooper et al., 2017)) we feel there is much scope for NVivo to be useful within this approach, which integrates both literature and empirical data.

## 271 Challenges and future research

The process does have inherent challenges; although the software is fairly user-friendly, it can be time consuming becoming familiar with NVivo and its functions. Furthermore, system issues can present further problems. For example, due to institutional system restrictions at the time, in our project only one researcher could work on the file from a shared drive at once. This meant that the master file, which was saved on a password protected institutional shared drive, had to be downloaded on individual computers while working on it, and re-uploaded to ensure data protection on a secure drive. However, these issues are not distinct to realist approaches (Bergin, 2011).

279 This constituted the research team's first attempt at the use of NVivo in a realist evaluation. There are 280 undoubtedly other ways in which NVivo can be employed in a realist project. For example, nodes could 281 be used for Contexts, Mechanisms and Outcomes instead of programme theories. The use of NVivo 282 will (and should) be different dependent on the individual project; all realist projects require tailored 283 data collection and the analysis should also be project dependent. More complex functions could also 284 be employed in NVivo, for example, using matrices, and we highlight this as an avenue for future 285 research. Realist evaluations are carried out from different disciplinary perspectives and use a plurality 286 of methods that are fit for purpose due to the method neutrality of the approach. NVivo currently 287 allows input of audio, text based, and visual material, and more innovative approaches to data 288 collection could be incorporated in to realist analysis using NVivo. For example, stimulated recall 289 (Calderhead, 1981) which utilises video technology could be used where appropriate.

Finally, in this specific project, we feel we could have further integrated the substantive theories considered and thus added an extra layer of transparency at this level of abstraction; we will look to action this in future projects utilising NVivo and realist approaches.

#### 293 Conclusion

RAMESES I and II have provided a platform to improve the understanding and reporting of findings in realist research, by developing consensus and evidence-based reporting guidelines (Wong et al., 2016). We have shown how the use of NVivo in realist methods has the potential to aid realist researchers in the complex process of theory development, refinement and testing. It may also add transparency to the approach, by using several NVivo functions in innovative ways. Having illustrated how we used the different functions offered by NVivo in one realist evaluation project, we invite other researchers to take our work further, and to explore and advance the use of NVivo in realist methods.

## **Declaration of interest**

302 Ethical approval for the study was granted by Northumbria University's Ethical Approval system on 303 01/06/2015; all participants from the study provided informed consent to participate and for 304 publication. The data collected in the study is not readily available due to ethical constraints. Materials

- 305 used throughout the study are available upon request. The authors declare that they have no
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# 312 References

- BARBOUR, R. 2001. Checklists for improving rigour in qualitative research: a case of the tail wagging
   the dog? *BMJ*, 322, 115-117.
- BERGIN, M. 2011. NVivo 8 and consistency in data analysis: reflecting on the use of a qualitative data
   analysis program. *Nurse Researcher* 18, 6-12.
- BHASKAR, R. 1989. *The Possibility of Naturalism*, Hemel Hempstead, UK, Harvester.
- BRINGER, J., JOHNSTON, L. & BRACKENRIDGE, C. 2004. Maximizing transparency in a doctoral R
   thesis: the complexities of writing about the use of QSR\*NVIVO within a grounded theory
   study. *Qualitative Research*, 4, 247-265.
- 321 CALDERHEAD, J. 1981. Stimulated Recall: A method for research on teaching. *British Journal of* 322 *Educational Psychology*, 51, 211-217.
- 323 CLARE, L., ROWLANDS, J., ERROLLYN, B., SURR, C. & DOWNS, M. 2008. The Experience of Living With
   324 Dementia in Residential Care: An Interpretative Phenomenological Analysis. *The* 325 *Gerontologist*, 48, 711-720.
- 326 COOPER, C., LHUSSIER, M., SHUCKSMITH, J. & CARR, S. 2017. Protocol for a realist review of complex
   327 interventions to prevent adolescents from engaging in multiple risk behaviours. *BMJ Open*, 7
- DALKIN, S., FORSTER, N., HODGSON, P., LHUSSIER, M., PHILIPSON, P., CARR, S. 2018. Exposing the
   impact of intensive advice services on health: A realist evaluation. *Health and Social Care in the Community*. DOI:10.1111/hsc.12695
- DALKIN, S., GREENHALGH, G., JONES, D., CUNNINGHAM, B. & LHUSSIER, M. 2015a. What's in a
   mechanism? Development of a key concept in realist evaluation. *Implementation Science* 10.
- DALKIN S., FORSTER, N. 2015b. Using NVivo to enhance transparency in a realist evaluation.
   Available at: <u>http://www.qsrinternational.com/nvivo/nvivo-community/the-nvivo-blog/how-</u>
   <u>researchers-use-nvivo-to-enhance-transparency</u> [Accessed: 14.02.2020].
- DALKIN, S., LHUSSIER, M., JONES, D., PHILLIPSON, P. & CUNNINGHAM, W. 2018b. Open
   communication strategies between a triad of 'experts' facilitates death in usual place of
   residence: A realist evaluation. *Palliative Medicine* 32.
- DALKIN, S., LHUSSIER, M., PHILIPS, P., JONES, D. & CUNNINGHAM, B. 2016. Reducing inequalities in
   care for patients with non-malignant diseases insights from a realist evaluation of an
   Integrated Palliative Care Pathway. *Palliative Medicine*, 30.
- DOUGLAS, F., GRAY, D. & VAN TEIJLINGEN, E. 2010. Using a realist approach to evaluate smoking
   cessation interventions targeting pregnant women and young people. *BMC Health Services Research*, 10.
- FORSTER, N., DALKIN, S., LHUSSIER, M., HODGSON, P., CARR, S. 2016. Exposing the impact of Citizens
  Advice Bureau services on health: a realist evaluation protocol. BMJ Open, 6:e009887.
  347
- LAYDER, D. 1998. Sociological Practice: Linking Theory and Social Research, London, Sage
   Publications,.
- FEATHER, J.L. 2018. Developing programme theories as part of a realist evaluation of a healthcare
   quality improvement programme. *International Journal of Care Coordination.*

354 Journal of Qualitative Methods. 355 JAGOSH, J. Retroductive theorizing in Pawson and Tilley's applied scientific realism. Journal of Critical 356 Realism. DOI: 10.1080/14767430.2020.1723301. LHUSSIER, M., CARR, S. & FORSTER, N. 2015. A realist synthesis of the evidence on outreach 357 358 programmes for health improvement of Traveller Communities. Journal of Public Health, 38, 359 125-132. 360 MAIDMENT, I., BOOTH, A., MULLAN, J., MCKEOWN, J., BAILEY, S. & WONG, G. 2017. Developing a 361 framework for a novel multi-disciplinary, multi-agency intervention(s), to improve medication management in community-dwelling older people on complex medication 362 363 regimens (MEMORABLE)—a realist synthesis. Systematic Reviews 6. MALUKA, S., KAMUZORA, P., SANSEBASTIÁN, M., BYSKOV, J., NDAWI, B., OLSEN, E. & HURTIG, A. 364 365 2011. Implementing accountability for reasonableness framework at district level in 366 Tanzania: a realist evaluation. Implementation Science., 6. 367 MANZANO, A. 2016. The craft of interviewing in realist evaluation. *Evaluation* 1-19. 368 MARCHAL, B., MCDAMIEN, D. & KEGELS, G. 2010. A realist evaluation of the management of a wellperforming regional hospital in Ghana. BMC Health Services Research, 10. 369 370 MERTON, R. 1967. On Theoretical Sociology. Five Essays, Old and New., New York, The Free Press. 371 PAWSON, R. 2006. Evidence-based policy: a realist perspective, London, SAGE. 372 PAWSON, R. & TILLEY, N. 1997. Realistic evaluation, London, SAGE. 373 PEARSON, M., BRAND S.L., QUINN, C., SHAW, J., MAGUIRE, M., MICHIE, S., et al. 2015. Using realist 374 review to inform intervention development: methodological illustration and conceptual platform for 375 collaborative care in offender mental health. BMC Implementation Science, 10:134. 376 PUNTON, M., VOGEL, I. & LLOYD, R. 2016. Reflections from a realist evaluation in progress: Scaling 377 ladders and stitching theory. Centre for Development Impact. 378 RAMESES II Project. 2017a. Developing Realist Programme Theories. Available at: 379 http://www.ramesesproject.org/media/RAMESES\_II\_Developing\_realist\_programme\_theori 380 es.pdf [Accessed 14.02.2020]. 381 RAMESES II Project. 2017b. Retroduction. Available at: http://www.ramesesproject.org/media/RAMESES II Retroduction.pdf [Accessed: 382 383 14.02.2020]. ROBERT, E., SAMB, O., MARCHAL, B. & RIDDE, V. 2017. Building a middle-range theory of free public 384 385 healthcare seeking in sub-Saharan Africa: a realist review. Health Policy and Planning, 32. 386 RYCROFT-MALONE, J., BURTON, C., WILLIAMS, L., EDWARDS, S., FISHER, D., HALL, B. et al. 2016. 387 Improving skills and care standards in the support workforce for older people: a realist 388 synthesis of workforce development interventions. Health Services and Delivery Research, 389 4:12 390 SHAW, J., GRAY, C.S., BAKER, G.R., DENIS, J., BRETON, M., GUTBERG, J., et al. 2018. Mechanisms, 391 contexts and points of contention: operationalizing realist-informed research for complex 392 health interventions. BMC Medical Research Methodology, 18:178. 393 TURNER, A., MULLA, A., BOOTH, A., ALDRIDGE, S., STEVENS, S., BEGUM, M. & MALIK, A. 2018. The 394 international knowledge base for new care models relevant to primary care-led integrated 395 models: a realist synthesis. NIHR Journals Library, 6.25.

GILMORE, B., McAULIFFE, E., POWER, J. VALLIÈRES, F. 2019. Data Analysis and Synthesis Within a

Realist Evaluation: Toward More Transparent Methodological Approaches. International

- WELCH, V. & TRICCO, A. 2016. Reporting guidelines for realist evaluations seek to improve clarity
   and transparency. *BMC Medicine* 14.
- WELSH, E. 2002. Dealing with Data: Using NVivo in the Qualitative Data Analysis Process. Forum
   *Qualitative Social Research* 3, 26.
- WONG, G., WESTHORP, G., MANZANO, A., GREENHALGH, J., JAGOSH, J. & GREENHALGH, T. 2016.
   RAMESES II reporting standards for realist evaluations. *BMC Medicine* 14.

Nodes				Q Search Project
🔨 Name	/ 🍔	Files	References	Created On
Basic Needs	8	8	21	03/07/2015 14:43
1st Interview with CA staff - basic needs		2	4	27/11/2015 12:42
Literature - basic needs		6	13	27/11/2015 12:42

**Figure 1:** Displaying node and child nodes to segregate empirical data and literature.

Basic	needs 🗙
provision of a stop- to people feeling rel	neory: In a context where someone's basic needs are unmet, the pap (e.g. food parcel, prevention of homelessness, a fridge) leads leved and fosters trust in CAB (reasoning) resulting in an n and space to address deeper rooted problems (outcomes)
systems, the health-d	es support for this IPT: "For example, in well developed welfare amaging effects of sudden income losses resulting from ily breakdown may be reduced by the availability of welfare benefits."
Sorting out the most u	nt of theory post staff interviews argent issues allows the person to be less stressed and focus on what the quotes support this.
consequences more s connections they are l Are large social netwo	oser in those in lower Socioeconomic status (SES) areas? Are the severe in the cases that CAB clients present with? If a person has tight less likely to become out of control and can reach out for help easier, viks more helpful? Also dependent on SES of social network. If family aggling with money then they may not be able to support the potential
Could it be that it is ea friends and family?	asier to admit to a stranger that you are struggling as opposed to
This supports the con	al context: more people now need to contact CAB due to scruitny. text in this theory, as once the person's needs were met but a change r a change in the person's living circumstances has meant that their tt.
Sticking plaster quote resolution of problems	supports 'stop gap' in theory. Quotes also support immediate
	the underlying reasons as to why the person needs, for example, a not just issue them without investigation. Therefore the theory was
(e.g. food parcel, pro underlying reasons (	omeone's basic needs are unmet, the provision of a stop-gap evention of homelessness, a fridge) and investigation into for crisis leads to people feeling relieved and fosters trust in CAB g in an immediate resolution and space to address deeper rooted s)
07.11.2016	
over numerous probl aspect of crisis. This	dence in the project lead interviews for this support being maintained ems. In the clinet interviews this is represented as being limited to one may be a different view of the service, or how clients have described ems and more is discussed elsewhere.
	odels for the service - crises being returned to when they arise, low problems and everything in between, with CAB remaining reactive
Little evidence for the	e use of stop gaps, rather than ongoing support
unmet (first acute in homelessness, a fri reasons for crisis le	someone's basic needs are unmet or are under threat of being issue), the provision of a stop-gap (e.g. food parcel, prevention of idge) or prevention strategy and investigation into underlying teads to people feeling relieved and fosters trust in CAB g in an immediate resolution and space to address deeper rooted

- **Figure 2**: Opening the scrapbook screen shot of node linked memo, with restated programme theory,
- 411 highlighting how it was edited using additional coloured writing and strikethrough font function.

<u>9 ⊟ _⁄ 5 - =</u>		IPT	after staff interview (NVivo
File Home Import	reate Explore Share		
Cut	🔺 🗒 😚 Add To Set		
Paste Properties	Open Memo Link		ase File cation • Classification • Classification
Clipboard	Item Explore Coding	I	Classification
4 🚼 Quick Access	Nodes		
Files	🔨 Name	/ 😹 Files	References
i Memos	Agents of the State	***	0
崎 Nodes	Basic Needs	#	11
	CAB as a buffer	***	2
⊿ 😇 Data	For the People	8	2
⊿ 📑 Files	Health Advice	8	2
Interview Data	Health Conscientiousness	8	6
Literature1	⊕ O Lack of Trust	8	4
Meetings	E Cong term health behaviour	8	4
File Classifications	⊕ O Loss of Control (problem halved)	8	13
Externals	Hental Health	8	11
txtemais	Neo-Liberalism	8	8
Codes	Normalising the Issue	8	1
Nodes	Person of Standing	8	8
🔞 Relationships	Reactive service	8	8
🧓 Relationship Types	Reduced Burden	8	2
🖻 🌗 Cases	Shaming the Unhealthy	8	4
🖻 🎬 Notes	Stigmatised Position	8	11
⊳ Q. Search			
> 💥 Maps			
Dutput			

**Figure 3:** Screen shot of the initial programme theories in NVivo

1	E
т	J

Nodes				🔍 Search Project	
🔨 Name	/ 🍔	Files	References	Created On	Created By
Basic Needs	8	12	31	03/07/2015 14:43	ML
1st Interview with CA staff - basic needs		2	4	27/11/2015 12:42	SONIA
2nd interview wth CA staff - basic need		3	9	11/12/2015 16:57	NF
O Client interview - basic needs		1	1	09/03/2016 13:38	SONIA
Literature - basic needs		6	13	27/11/2015 12:42	SONIA

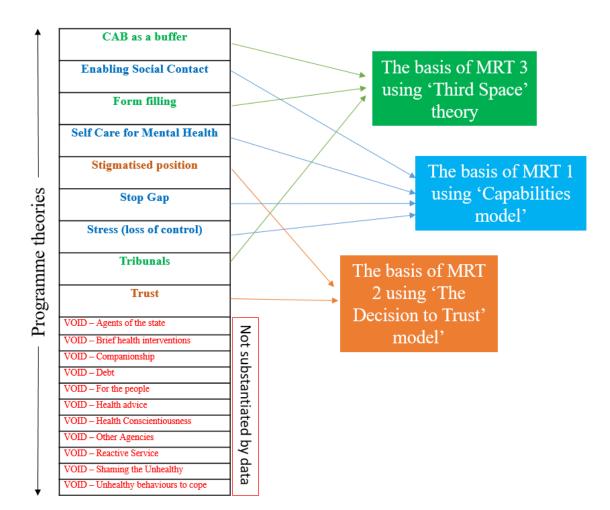
**Figure 4:** Displaying node and child nodes to segregate empirical data (by source) and literature.

File Home Import	Create Explore Share		
Acture Copy Paste Merge	Open     Memo     Create As Code       Uink     Create As Cases         Ouror     Visualize         Code     Auto       Range     Uncode	Case File Classification • Classificat	tion • Eist View •
Clipboard	Item Explore Coding	Classification	
🖈 Quick Access	<sup>4</sup> Nodes		
Files	🔨 Name	/ 😹 Files 🛛 Ri	eferences
i Memos	CAB as a buffer	8 31	1
lodes	Enabling social contact	8 33	1
	😥 🔵 Form Filling	8 19	
Data	B Self Care for mental Health	8 25	1
4 📑 Files	B O Stigmatised Position	8 31	
🖻 📗 Interview Data	🕀 🔵 Stop Gap	8 22	
Literature1	Stress (loss of control)	8 31	
Meetings	😥 🔵 Tribunals	24	
Pictures	Trust	8 24	
File Classifications	VOID - Agents of the State	8	
🕞 Externals	P VOID - Brief Health Intervention	8 17	
Codes	🗈 🔵 VOID - Companionship	8	
o Nodes	😰 🔵 VOID - Debt	8	
Relationships	😥 🔵 VOID - For the People	8	
🧓 Relationship Types	🐵 🔵 VOID - Health Advice	8	
🕞 🕞 Cases	VOID - Health Conscientiousness	8 25	
🗎 Notes	VOID - Other agencies	8 26	
	VOID - Reactive service	8 20	
Search	VOID - Shaming the Unhealthy	8	
🕺 💥 Maps	VOID - Unhealthy behaviours to cope	8	

## 421 \*

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423 Figure 5: Final list of 'tested' programme theories; also displaying those that were 'voided' throughout424 the analysis.



429 Figure 6: List of programme theories; those that were 'voided' and those that contributed to final430 (middle range) explanatory framework.

# 432 List of Figure Captions

- **Figure 1:** Displaying node and child nodes to segregate empirical data and literature.
- **Figure 2:** Opening the scrapbook screen shot of node linked memo, with restated programme theory,
- 436 highlighting how it was edited using additional coloured writing and strikethrough font function.
- **Figure 3:** Screen shot of the initial programme theories in NVivo
- **Figure 4:** Displaying node and child nodes to segregate empirical data (by source) and literature.
- Figure 5: Final list of 'tested' programme theories; also displaying those that were 'voided' throughoutthe analysis.
- 441 Figure 6: List of programme theories; those that were 'voided' and those that contributed to final442 (middle range) explanatory framework.