

## Use the Critical Incident Technique (CIT) in Medical Education Research

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The Critical Incident Technique (CIT) is often employed in qualitative research where the aim is to study phenomena in-depth by facilitating exploration of feelings, clarification of meanings and where flexibility within data collection and analysis is required (FitzGerald et al, 2008). The technique allows researchers to use open-ended procedures, encouraging participants to share experiences they consider as important, directed only by the research question (Patrick et al, 2009). The purpose of this How To is to demonstrate how CIT can be used as a method of data collection in Medical Education research and how CIT data are analysed.

### CIT in brief

CIT has been used extensively as a research data collection method and as an evaluation tool in a variety of healthcare settings, some examples include teaching strategies for teaching professionalism (Rademacher et al. 2010), examining students' experiences at a dental school (FitzGerald et al., 2008), and assessing the long-term outcomes of interprofessional education (Graybill, 2017).

First described in the 1950s by Flanagan (1954), the technique has its roots in organisational psychology and is defined as "a set of procedures for collecting observations of human behaviour in such a way as to facilitate their potential usefulness in solving practical problems and developing broad psychological principles" (p.327). A critical incident is produced by the way participants look at a situation; it is their interpretation of the significance of the event. CITs are essentially unusual and memorable events that could help identify characteristics leading to success or failure on a task (Durand, 2016). As described by Flanagan, 'An incident is critical if it makes a 'significant' contribution, either positively or negatively to the general aim of the activity and it should be capable of being critiqued or analysed' (p. 338).

### Collecting CIT data

CIT is a technique that allows data collection to be carried out in a variety of ways including interviews, focus groups, and a qualitative questionnaire. Incidents can be written by people who took action in a particular situation, by qualified observers, or both.

Below are some key steps for asking participants to organise their reflections and to write or talk through the incidents.

1. Instruct the participants to think back to a particular organisational / educational / healthcare setting (this will be driven by the research question) and to write or describe at least two incidents that occurred; one that they would define as effective and one that they would define as ineffective.
2. Your aim is to collect as many critical incidents as possible

from participants. If your group is restricted in size, you may not want to limit them to just one effective and one ineffective incident and instead ask them to recall as many incidents as they wish. It is important to ask them to think back to a specific day in a specific situation and to focus on the experience.

3. For each example ask them to answer three questions that are detailed and accurate in their responses:
  - Describe what happened
  - Why was it effective/ineffective behaviour?
  - How did things turn out?
4. Tell them that their reporting of critical incidents should be anonymous and should not contain any identifying information about any other person involved or themselves.
5. To avoid order effects, the requests for an effective and ineffective incidents should be counterbalanced.

### Analysing CIT data

Analysing CIT data is time consuming and following the steps described here will help the process. The examples used relate to research on students perceptions of personal tutoring.

#### Step 1- Familiarisation with your data

1. Give each incident a number or code and read them to identify conceptually consistent themes.
2. There is no restriction on the number of themes at this stage. You might find it useful to transfer the incidents into a table where you could note the theme in the final column (see Table 1).
3. After sorting the incidents, think about how you will define and name each theme. If at all possible, work with another researcher to do this.

Table 1 – Sorting of critical incidents

Incident No	Describe what happened	Why was it effective instructor behaviour?	How did things turn out?	Theme / Category
e.g. 001	I was working on an assignment and got confused... so emailed my tutor and asked. The tutor replied really quickly and explained things much more clearly.	I was so worried he'll ignore me but the response was very quick and he didn't make me feel stupid asking questions. I was afraid he'll say 'read the assignment brief' or 'ask your friends' but he didn't.	I was able to correct my answer and submit the assignment on time, I did ok.	Approachable / available
002				

## Step 2 - Developing themes / categories

Ideally you will discuss your themes with another researcher in order to resolve discrepancies and to devise coherent dimensions.

- Examine how many themes you have in common and how many are different.
- For each theme decide on a definition and give it a code (see Table 2).
- Identify a couple of example quotations from the critical incidents.

The process is informed by Boyatzis' (1998) recommendations that a good thematic code should include the following to reduce confusion: clear and concise labels, definitions, descriptions when the theme occurs and examples of both positive and negative incidents (Boyatzis, 1998, p. 31).

**Table 2 – Defining your categories**

Theme	Code	Definition	Examples
e.g. Approachable	1	A tutor who makes students feel comfortable and who is open to questions	'I could ask her anything and she never made me feel it was inconvenient'. 'He always responded to my emails...even when it was something quite trivial'.

To aid reliability and validity, each incident must be evaluated against the following four criteria:

- The incident must involve an experience.
- The incident must have a positive or negative impact on the participant.
- The incident must involve a specific episode.
- The incident must be detailed and include antecedent information, a detailed description of the incident, and the outcome

## Step 3 - Calculating inter-rater reliability

This is not an essential step however, should you wish to conduct further analysis to ensure reliability, CIT provides a good framework for the next step. The final stage of the process involves working independently to work out which category the incident falls under:

1. Explain the categories and their definitions to at least two other researchers and ask them to assign a theme for each incident. You will need to provide each rater with a handout of the themes and what they mean (i.e., Table 2). You will also need to give them a copy of Table 3 so they can rate each incident.
2. Cross check whether the researchers agree or disagree for each incident and note it in the table (Table 3).
3. Work out the total number of agreed and the total number of disagreed incidents.
4. Calculate Inter-rater reliability using the following formula:  

$$\frac{\text{agreements}}{\text{agreements} + \text{disagreements}} \times 100.$$
 A reliability figure below .40 is poor, .40 to .75, is good, and above .75 is excellent.

**Table 3 - Calculating Inter-rater Reliability**

Incident	Eff/Ineff	Rater 1	Rater 2	Agreed	Disagreed
e.g. 1	Eff	Approachable	Approachable	X	

## Summary

The Critical Incident Technique (CIT) is a useful data collection tool that enables the generation of rich contextual data. Like all other research tools, the quality of the data generated will be determined by the quality of the research question. To this end, specificity is of utmost importance and the research context and aims have to be clearly defined from the outset.

## References and further reading

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