

# 12.2 Expression Parts

The figures in this section illustrate some terms used to describe different parts of an **expression** in the discussion of **normal forms**, the guidance on **transforming expressions to normal forms** and on **testing subsumption and equivalence between expressions**.

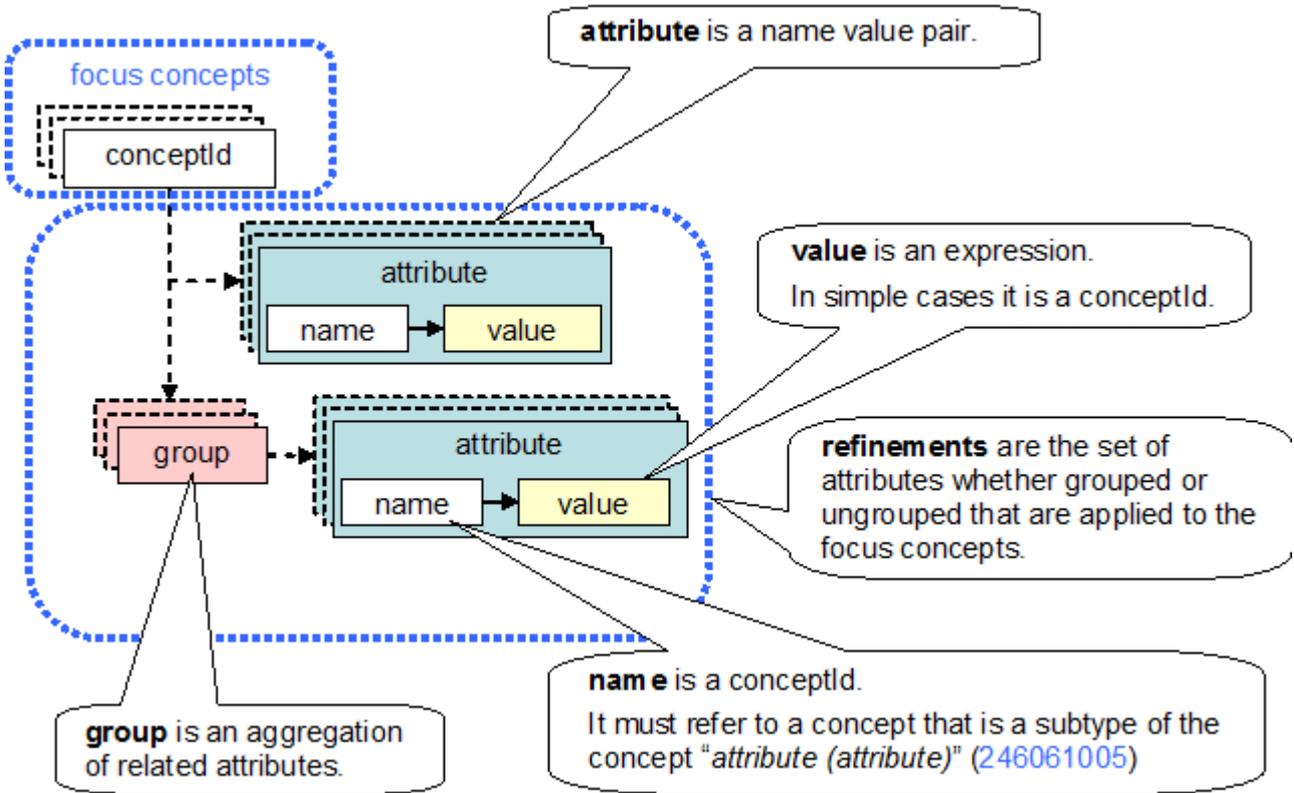


Figure 12.2-1: Focus concepts and refinements

As illustrated by [Figure 12.2-1](#), an **expression** consists of one or more **conceptIds** plus optional **refinements**. The **refinements** may include any number of **attributes**. **Attributes** are expressed as name-value pairs and may apply independently or as part of a group.

The name part of the **attribute value pair** is a **conceptId** that refers to a **concept** that names the characteristic that is refined by this attribute. The value part of the **attribute value pair** is an **expression**. In simple cases, this is just a **conceptId** referring to a **concept** that represents the appropriate value for this attribute. However, it may also be a nested **expression** as shown in .

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**Captions on current page:**

- Table: with ID: **expression-nesting-**
- Figure: with ID: **concept-refinement**
- Figure: with ID: **nested-expression**
- Figure: with ID: **context-expression**

illustrates the potential for nesting of **expressions** and the naming conventions applied in this guide to distinguish different parts of an **expression** at different levels. The top level of an **expression** is referred to as the "focus expression". It consists of a set of one or more **focus concepts** and a **refinement**. The values of the attributes in the **focus concept refinement** are a "nested expression" that consist of one or more "value concepts" optionally refined by a nested **refinement**. **Expressions** may be nested recursively so there may be further levels of "nested expressions" with "nested refinement". If it is necessary to distinguish the level of nesting, the following naming convention is applied.

Table 12.2-1: Expression Nesting

Level number	Description
level 0 <b>expression</b>	Focus <b>expression</b>
level 1 <b>expression</b>	Nested <b>expression</b>
level <i>N</i> <b>expression</b>	An <b>expression</b> nested inside a level ( <i>N</i> - 1) <b>expression</b>

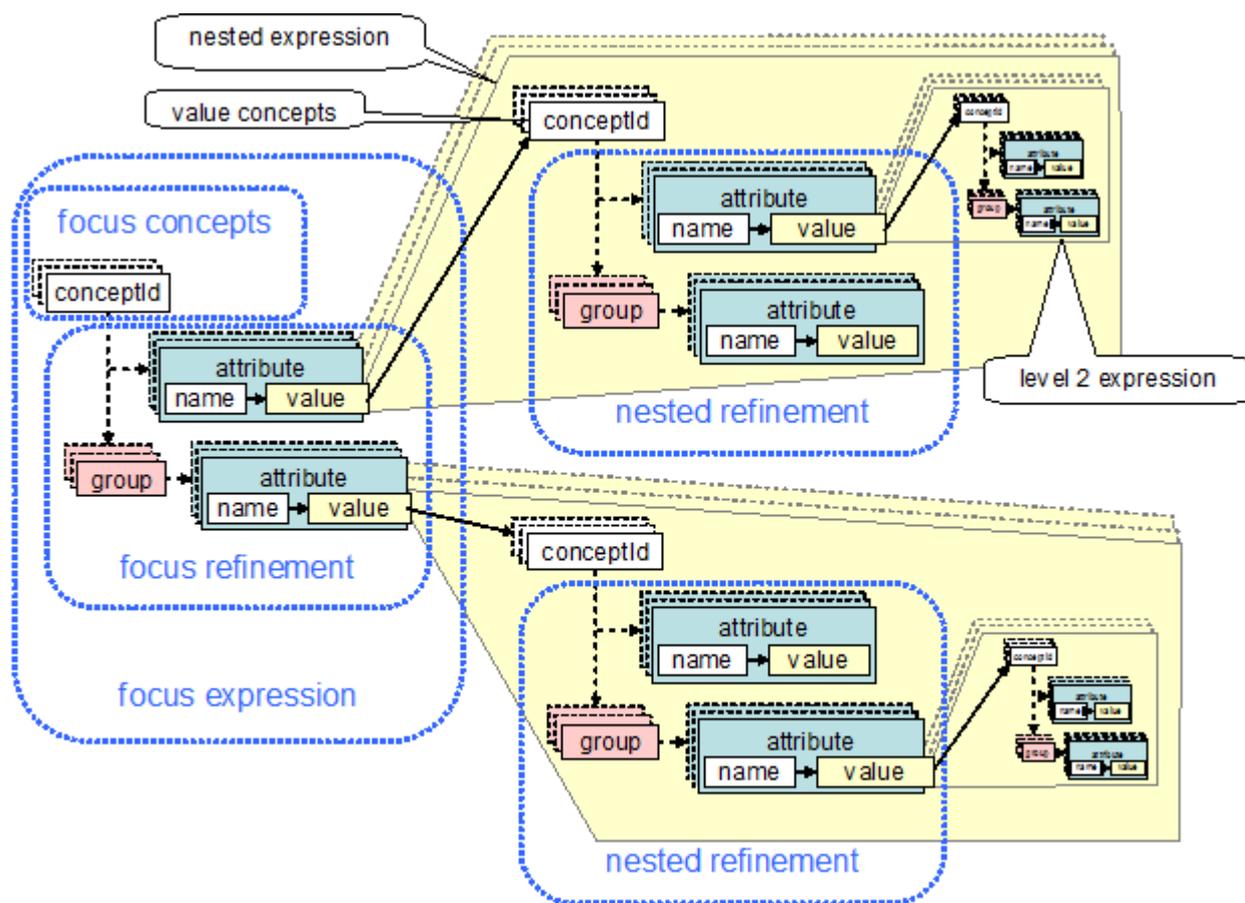


Figure 12.2-2: Illustration of the names used to refer to parts of a nested expression

The general pattern shown in Figure 12.2-2 applies to all **expressions** whether or not they include **context** information. Figure 12.2-3 illustrates the specific features of an **expression** that includes a representation of **context**.

The "focus expression" of a context containing **expression** is the **context wrapper** and may include a "context refinement" consisting of a set of context attributes:

- 246090004 |associated finding| or 363589002 |associated procedure|;
- 408729009 |finding context| or 408730004 |procedure context|;
- 408732007 |Subject relationship context (attribute)|;
- 408731000 |temporal context|.

In a normalized context **expression**, all context attributes are grouped. Each group in a normalized **context wrapper** contains a complete set of four context attributes [1].

The value of the 246090004 |associated finding| or 363589002 |associated procedure| is a "nested expression" which is referred to as the "clinical kernel".

During some stages of processing, the "clinical kernel" is separated from the "nested expression". When separated from its context the "clinical kernel" is the "focus expression" of a context-free **expression**.

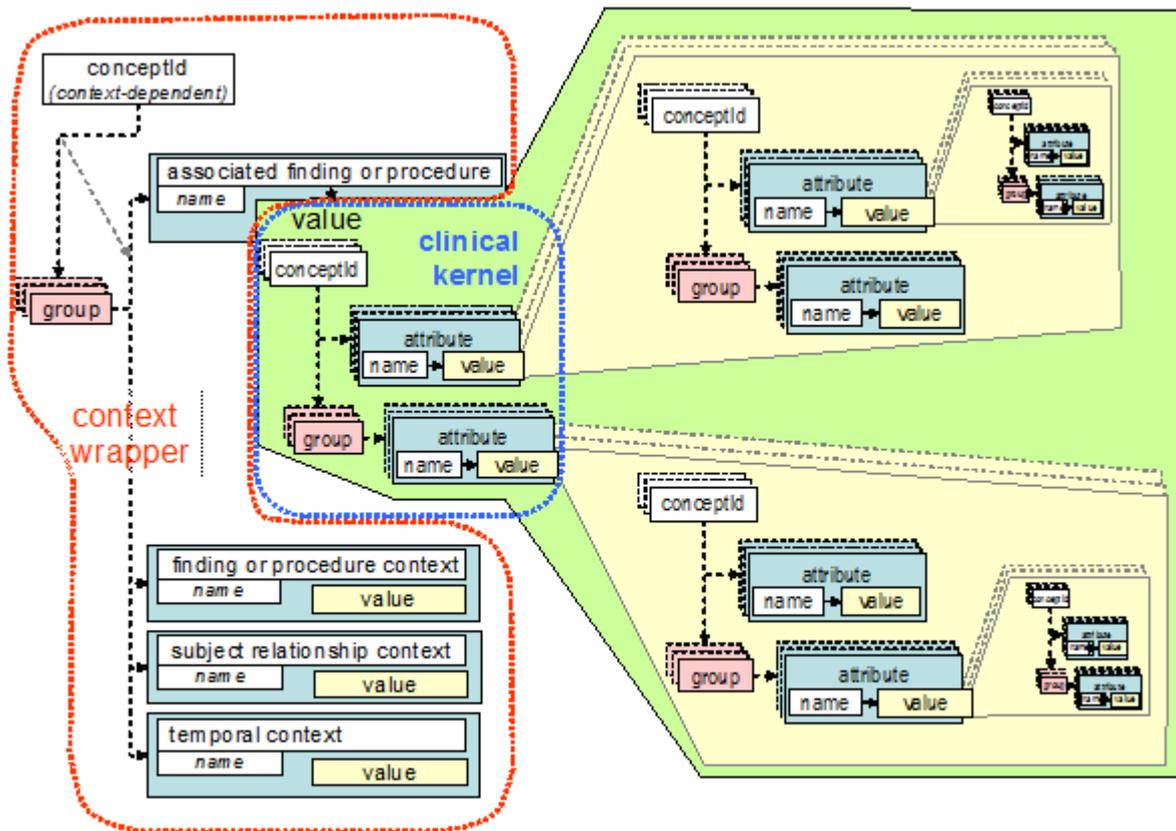


Figure 12.2-3: Illustration of the names used to refer to parts of an expression that represent context